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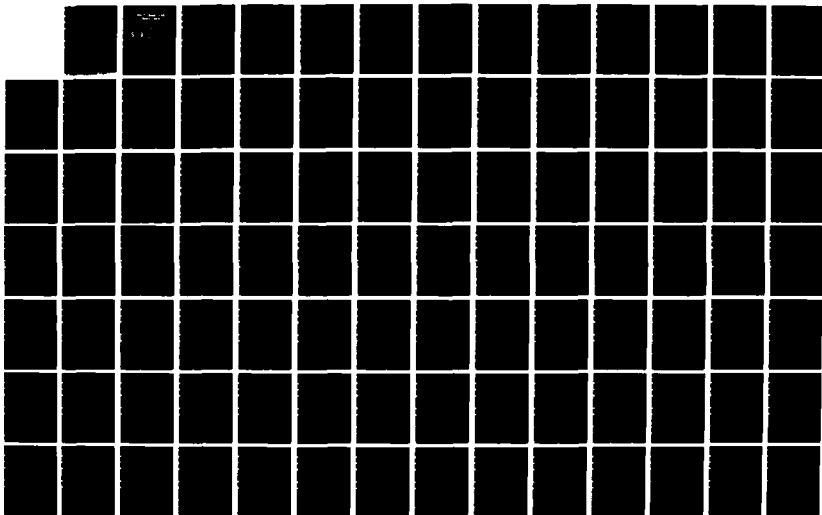
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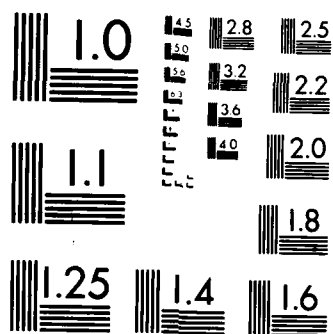
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THESIS

AN ANALYSIS OF THE STRUCTURAL ORGANIZATION
OF THE
VENEZUELAN NAVAL AVIATION

by

Omar de la Cruz Quintero Torres

December 1987

Thesis Advisor:

N. C. Roberts

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<p>→ The Venezuelan Naval Aviation Organization created in 1962 has experienced a continual evolution in accordance with changes in the environment surrounding it. From a tiny Aviation Office, it has evolved into an Operational Command within the Venezuelan Navy. However, during the last 7 years the Naval Aviation Command has experimented with several structural reorganizations in an attempt to find a suitable structure for its organizational requirements. This thesis assesses the purpose, environment, and formal organization of the Venezuelan Naval Aviation Organization to identify the structural deficiencies that could be improved upon. After analyzing three possible structures, the one considered the best fit for current organizational requirements was recommended as possible solution to the structural deficiencies encountered. <i>Keywords:</i></p> <p style="text-align: right;"><i>Theses. f</i></p>					
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ABSTRACT

The Venezuelan Naval Aviation Organization created in 1962 has experienced a continual evolution in accordance with changes in the environment surrounding it. From a tiny Aviation Office, it has evolved into an Operational Command within the Venezuelan Navy. However, during the last 7 years the Naval Aviation Command has experimented with several structural reorganizations in an attempt to find a suitable structure for its organizational requirements. This thesis assesses the purpose, environment, and formal organization of the Venezuelan Naval Aviation Organization to identify the structural deficiencies that could be improved upon. After analyzing three possible structures, the one considered the best fit for current organizational requirements was recommended as a possible solution to the structural deficiencies encountered.

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I also want to dedicate my work to my children Omar de la Cruz and Leslie Marie for their patience and understanding they demonstrated during my studies at the Naval Postgraduate School.

I. INTRODUCTION

A. STATEMENT OF THE PROBLEM

Since its establishment in 1962, the organizational structure of Venezuelan Naval Aviation has experienced a continual evolution (See Chapter III). This evolution has been a natural response of the organization to changes in its operating environment, mainly due to extensions in its scope of responsibility and the acquisition of different types of aircraft necessary to accomplish new mission assignments.

Throughout its existence, Venezuelan Naval Aviation has been organized under a functional concept, that is structured along technical and operational lines. Two main components, tactical and administrative, under different commands, had been operating with apparently no major organizational inconveniences.

However, in May 1983 a major reorganization took place in which the two main components were joined together under a common command. In this new organization, the functional concept of organization still prevailed. However, the idea to economize human and material resources drove the management to integrate the previously completely specialized sub-units into the new Naval Aviation Command. The two sub-units were the Naval Air Squadron and the Naval Air Transportation Division.

It was not long before problems arose, however. The operational units experienced a decrease in their performance, as observed by an increase in the gap between the planned and executed flight hours. In February 1986 an inspection by officers from a senior

command recommended several measures to improve the effectiveness of the Naval Aviation Command, among them was the rearrangement of the organizational structure.

Of course, there are different factors that could affect the performance of this organization; for example constraints in the availability of human, material, and financial resources; the internal processes, the reward system, the state of development of technical skills, and so forth. However, the new highly interdependent organizational arrangement was assumed to be a major cause of the problem that the Naval Aviation Command experienced.

As a consequence, throughout the last two years, several rearrangements of the organization have been tried. The Naval Aviation Command is still looking for an organizational structure that best matches the actual operational requirements.

B. OBJECTIVE OF STUDY

Due to the difficulties implicit in the distance barrier between the author and the organization under study, only a structural analysis was undertaken, and not a complete assessment of the organization's problems.

The primary objective of this study was to find any weaknesses in the structure of the Venezuelan Naval Organization that could impede the accomplishment of its mission.

Based on this assessment, recommendations of potential changes in the organizational structure of the Venezuelan Naval Aviation will be made to facilitate the solution of current issues within the organization, and set the foundation for future development.

C. OUTLINE OF STUDY

In order to accomplish this study, an introduction discussing the problems and objectives of the study is addressed in Chapter I.

The methodology employed to complete the study along with some organizational concepts are addressed in Chapter II.

The history of the evolution of Venezuelan Naval Aviation is summarized in Chapter III as background for subsequent chapters of the thesis. The different stages of that history are titled the Beginning, the ASW¹ Tactical Stage, and the Helo Carrier Operations.

The basic organizational arrangements with their advantages and disadvantages are reviewed in Chapter IV.

Chapter V provides an analysis of the organization in effect on June 1987, when this study began. The purpose of the organization, the environment, and the formal organization describe the whole Naval Aviation Organization.

The organizational structural problems encountered in this study are analyzed in Chapter VI.

Chapter VII provides an evaluation of three different possible arrangements to address these structural problems, establishing the strengths and weaknesses of each alternative.

The study was concluded with the findings and recommendations concerning the structure of Venezuelan Naval Aviation pointed out in Chapter VIII.

¹ ASW: Anti-Submarine Warfare

II. METHODOLOGY

A. METHODS OF RESEARCH

To accomplish the objectives of this study, the following steps were taken:

First, a search of the available literature in the field of organizational design and organizational development was made to provide a reference framework for the research. Also, official and unofficial documents from the Venezuelan Navy, such as organizational manuals, written reports, official resolutions, and organizational charts were reviewed.

Second, fifteen on site interviews were conducted on the 29th and 30th of June, 1987, with among others: The Commander of Naval Aviation, the Operations Division Officer, the Logistics Division Officer, the Transport Squadron Commanding Officer, the Patrol Squadron Commanding Officer, the Helicopter Squadron Commanding Officer, the Planning and Control Officer, the Personnel Officer, the Supply Officer, the Communications Officer, the Training Officer, the Finance Officer, the acting Safety Officer, and two Senior Officers associated with the Maintenance Department.

The interviews were unstructured in nature, and were aimed at finding out information about the internal workings of the unit such as, their clarity of comprehension of their functions and the goals sought, the work flow within and without the unit, the quantity, quality and flow of information, the problems affecting the specific sub-unit, and opinions about the problems that affect the organization as a whole. Appendix A states the questions asked during the interviews.

Finally, four telephone interviews were conducted, as required, to clarify points that raised some doubts during the research study. These interviews were conducted with Senior Officers associated with the Maintenance Department, a former Transport Squadron Commanding Officer, and a former Maintenance Officer. Appendix A states the questions asked during the telephone interviews.

The sample of personnel interviewed on site and by telephone consisted of military officers who are currently working within the Naval Aviation Organization, with the exception of one officer who was conducting thesis research. Those interviewed were selected from the organizational chart of the Naval Aviation Command where they appeared as officers in charge or acting officers of the main sub-units of the Naval Aviation Organization. Nine out of fifteen interviewees were seniors officers (Lieutenant Commanders or above) with more than ten years of service mostly in Naval Aviation.

The data obtained during the interviews was qualitative in nature; however, the results were considered valid and highly credible due to the naval aviation experience of the interviewees and their knowledge of current problems facing the Naval Aviation Organization.

B. CONCEPTS

This study is based in part on a literary review of organizational theories which include a vast number of expressions for different organizational concepts, however only those concepts which were considered relevant to this study were stated.

1. Definition of Organization

An organization is basically a group of people that join their efforts to achieve an objective

otherwise unreachable. Many definitions of the organization have been made, but generally all conclude that the organization is an orderly arrangement of people and material created in order to attain the objective of the whole [Ref. 1:p. 1-2].

An organization is a system composed of three basic interrelated subsystems. One is structural with no human elements, it is the way that the interactions and coordination link the technology, tasks, and people to ensure the accomplishment of the purpose of the organization [Ref. 2:p. 59]. A second subsystem consists of the labor force: their skills, attitudes, motives, personalities, and interests. The third subsystem refers to the status and role concepts within the organization.[Ref. 3:p. 355]

2. Principles of the Organization

Because of the type of hierarchical organization that Naval Aviation is, some classical principles of the organization seem important to remember. They are unity of command, span of control, and delegation of authority.

a. Unity of Command

This classical principle refers to the relationship between the members of the organization, establishing that no member shall report to more than one superior. The lines of authority must be clearly established to ensure that all personnel know who they direct and to whom they report. This principle reduces the ambiguity and the possibility of conflicting orders.[Ref. 4:p. 37]

b. Span of Control

This principle refers to the number of subordinates that can be supervised without affecting the effectiveness of the organization. There is not an exact ideal number for span of control, because the

size depends upon the type of tasks (structured/non-structured) and the training level of the subordinates. However, the classical approach states that by limiting the span of control to a relatively small number, usually no more than seven, better control and coordination is ensured among lower level activities.[Ref. 4:p. 37]

c. Delegation of Authority

In order to make efficient use of the resources, the management of the organization should delegate the authority to the lowest level of competence commensurate with the subordinate's assigned responsibility and capabilities. This principle also recognizes that officers at all levels are held accountable for the performance of their segment, even if they have delegated some authority to their immediate subordinates to manage certain functions.[Ref. 1:p. 1-3]

III. BRIEF HISTORY OF THE VENEZUELAN NAVAL AVIATION ORGANIZATION

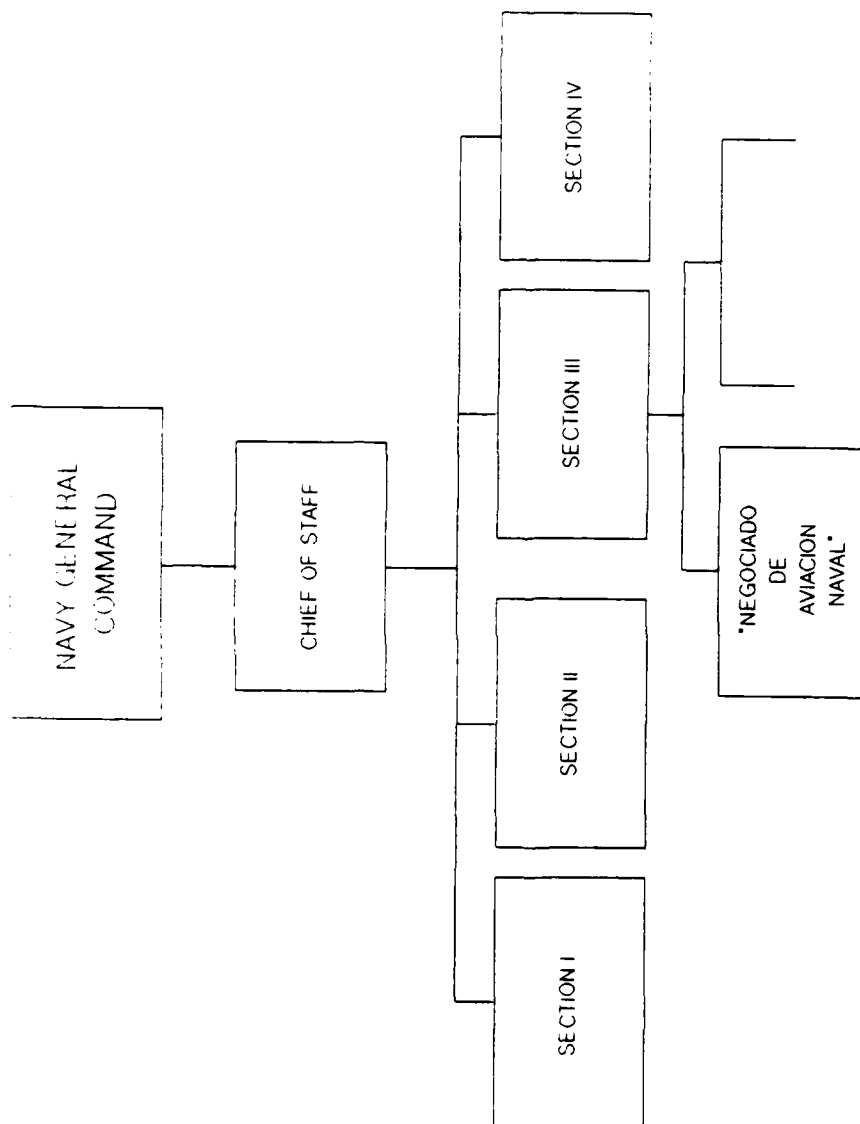
A. THE BEGINNING

In 1962, the Venezuelan Navy Command acquired its first aircraft, in response to the ever increasing requirement to insure fast and guaranteed transportation routes between the various Naval Posts along the Venezuelan waterways. A Cessna 310 (side number ARV²-11) executive model airplane was the first answer to this expanding necessity [Ref. 5:p. 35]. And soon the emblem of Venezuelan Navy began to cross both national and international skies.

One year later, in 1963, the first structured organization to support the operations of this new air command appeared (See Figure 1). An office named "Negociado de Aviacion Naval" was attached as branch of third section of the Navy General Staff. This office carried out some studies relating to air crew and aviation technician training. When the second aircraft, one of the famous Douglas DC-3s, appeared on the scene, this office was designated as a small organization tasked to plan and control air operations as well as to give first level maintenance support.[Ref. 5:p 35]

Throughout the following 11 years, no major changes in the structure of the organization occurred. The acquisition of another Douglas DC-3 in 1967 and two more Cessna 310s, one in 1970 and one in 1971, established this small organization as an incipient Air Transportation Squadron.

² ARV : ARMADA REPUBLICA DE VENEZUELA



Navy Staff Macro-Organizational Chart 1963

Figure 1

The year 1974 brought the birth of the first ASW Tactical Squadron, indicating the end of what could be called the first stage of the Venezuelan Naval Aviation.

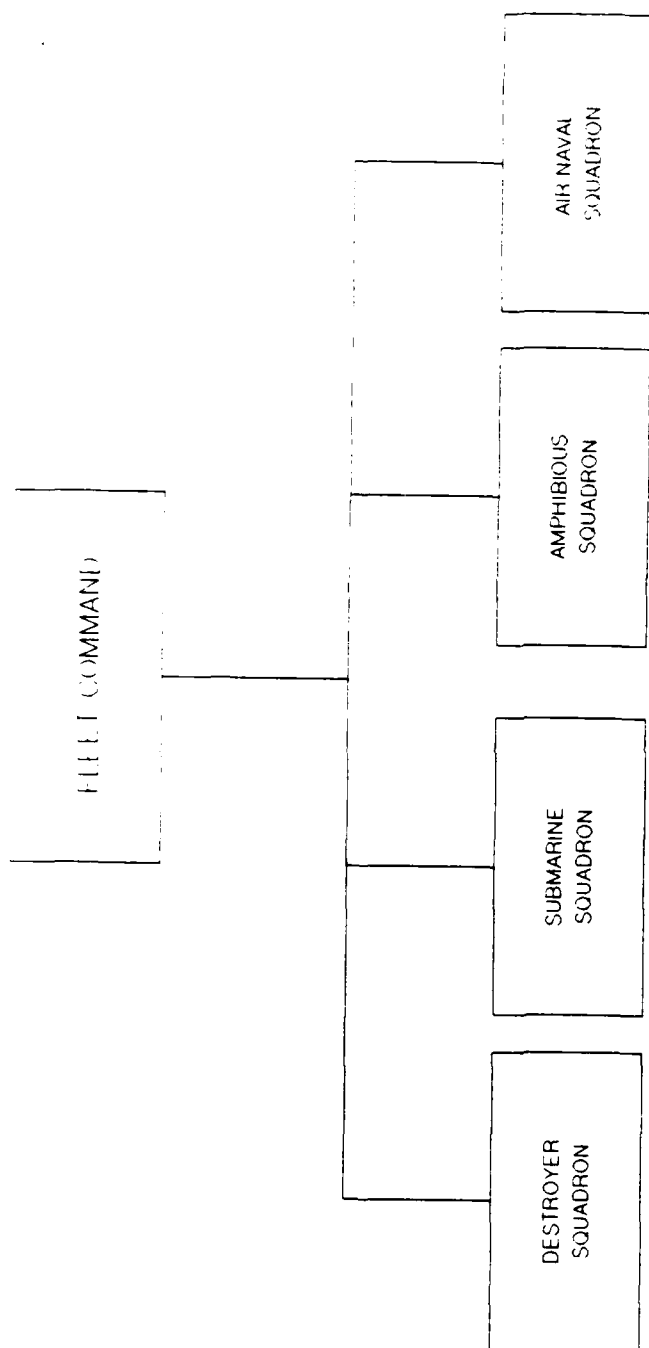
B. THE ASW-TACTICAL STAGE

After two years of planning to organize and develop an airborne anti-submarine capability for the navy, the Defense Ministry passed Resolution M-412 which created the Antisubmarine Air Squadron (AS-10) on November 28th 1974. This new squadron was placed under the authority of the fleet commander as a parallel organization with naval ship squadrons [Ref 5:p 38]. Figure 2 illustrates the macro-organization of the fleet for the year 1974.

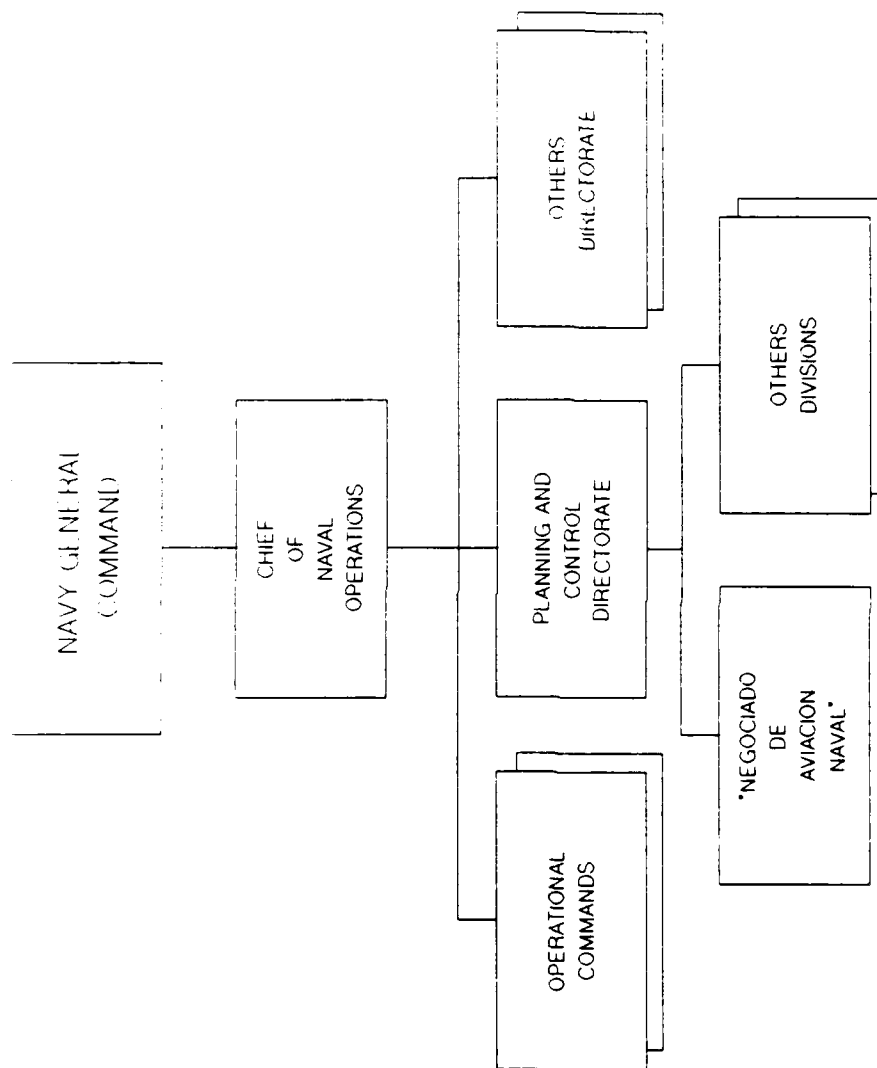
Thus, at the end of 1974 Venezuelan Naval Aviation was split in two components: one attached to the fleet and assigned the ASW Tactical mission, and the other assigned the mission of executive, cargo and passenger transportation and attached to a new Planning and Operational Control Directorate created by the Defense Ministry Resolution M-329 of October 18th 1974 [Ref. 6]. (See Figure 3)

The new ASW Squadron organization was based on functional criteria and was composed of a Command element, a small Staff and three main Divisions: Operations Division, Maintenance Division, and Supply Division. The transportation component was reorganized in a similar way as the ASW Squadron. Figure 4 displays the macro-organization of the Venezuelan Navy ASW Squadron AS-10.

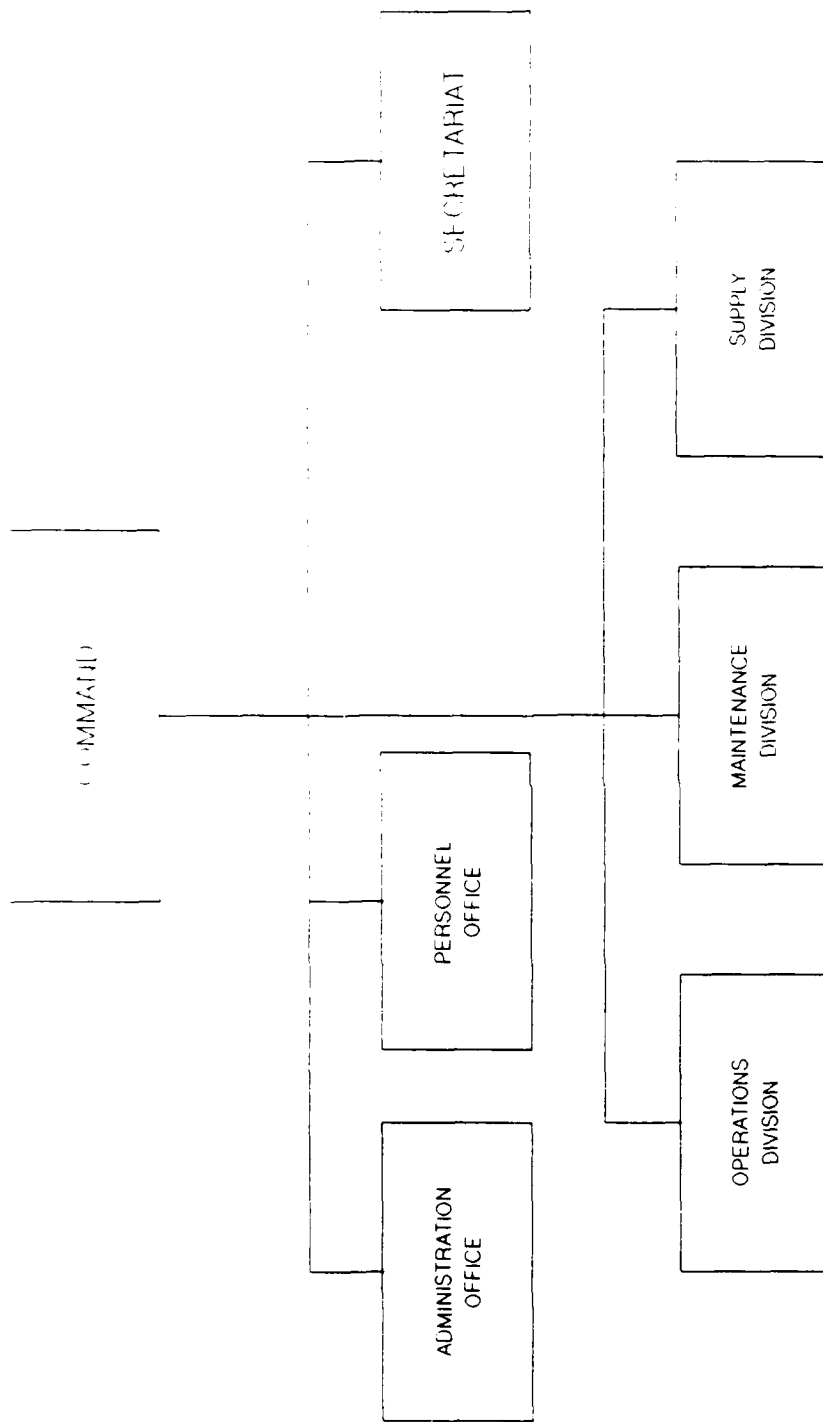
On March 24th 1977, by order of the Chief of Naval Operations, the transportation component of the Naval Aviation was put under the authority of the ASW Squadron Commanding Officer, and was renamed as the Air Transportation Division [Ref. 7]. Both components



Fleet Macro-Organization Year 1974
Figure 2



Naval Operations Command Macro-Organization 1974
Figure 3



Venezuelan Navy ASW Squadron Macro-Organization
Figure 4

maintained the same self-contained organizational structure because they were geographically separated. The new Administrative and operational relationships were the only changes that were made. However, one year later, in 1978, the relationship between the two components was severed due to command relationship conflicts with the Planning and Operational Control Directorate. Both components returned to their prior status.

Except for the exchange of the two old Douglas DC-3s for a 44 passengers turbo prop HS-748-AVRO Aircraft, no major changes occurred in Naval Aviation aircraft until 1980 when the first ASW/ASV³ helicopter arrived with the newly acquired "ARV MARISCAL SUCRE" F-21 Missile Guided Frigate. The second stage was over and a new era in Venezuelan Naval Aviation began.

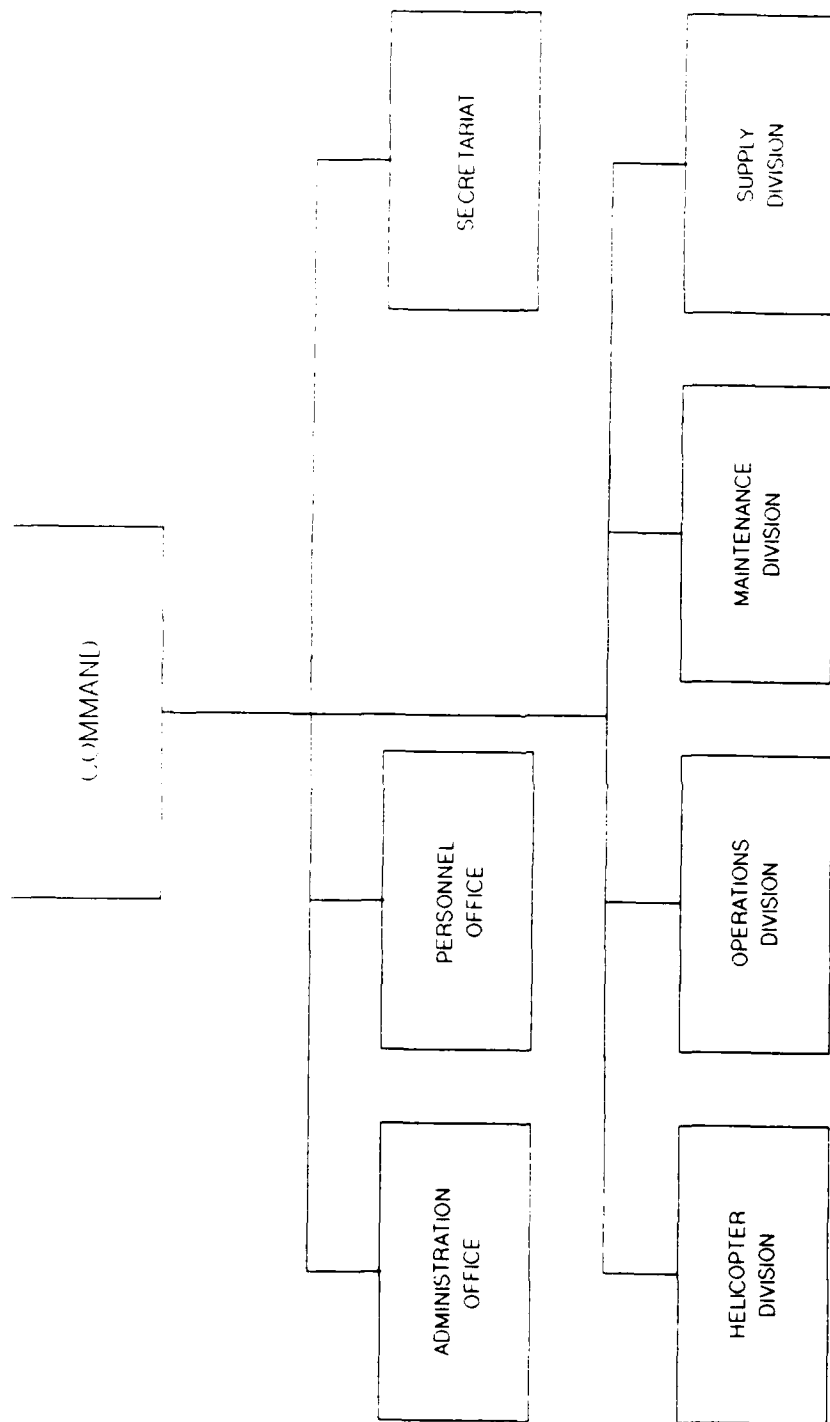
C. HELO CARRIER OPERATIONS

The year 1980 brought a new employment of the aviation assets of the Venezuelan Navy. Take-offs and landings from Frigates in support of antisubmarine and anti-surface vessel naval air operations for the fleet signaled the beginning of a new stage in Venezuelan Naval Aviation.

Five additional helicopters arrived consecutively, as well as air crews and technical personnel specializing in helicopter operations. The new group was organized, except for the supply division, as a self-contained unit under the command of the ASW Squadron Commanding Officer (See Figure 5).

Throughout 1981 and 1982 the transportation component grew with the acquisition of three new 24 passenger AVIOCAR C-212 type aircraft, one 46 passenger, four engine, DASH-7 airplane, and three

³ ASV AntiSurface Vessel



ASW Squadron Macro-Organization 1980

Figure 5

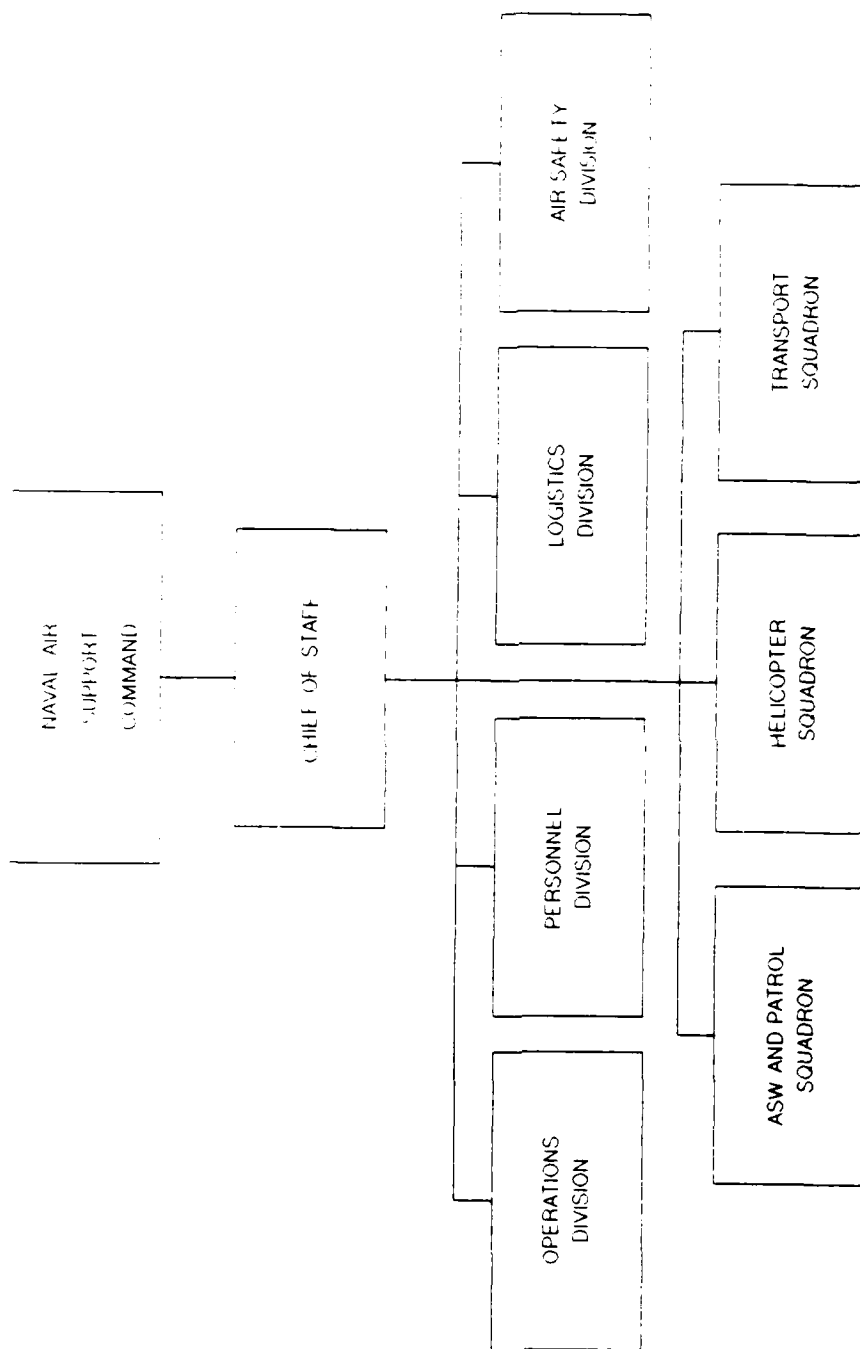
new executive airplanes, with the tactical component concurrently receiving three executive Cessna type aircraft for surveillance purposes. This continual growth of Naval Aviation and the idea to economize the naval resources drove the top management of the organization to opt for the reunification of Naval Aviation.

On May 11th 1983, the Defense Ministry Resolution M-2794 reunified Venezuelan Naval Aviation as a Naval Air Support Command "Comando de Apoyo Aeronaval", as a major branch paralleling the other four strategic components of the navy: Fleet, Marine Corps, Coast Guard, and Riverine Force.

The new Command was arranged under a functional concept with a Rear Admiral as Commanding Officer, a Chief of Staff with four Divisions: Operation Division, Personnel Division, Logistics Division, and Air Safety Division; three squadrons comprised the line units: ASW and Patrol Squadron, ASW/ASV Helicopter Squadron, and Air Transportation Squadron (See Figure 6).

On July 1st 1985, this Command was renamed the Naval Aviation Command "Comando de la Aviacion Naval", in accordance with Defense Ministry Resolution M-0852. Four new AVIOCAR C-212 Patrol version aircraft were assimilated into the ASW and Patrol Squadron in March 27th 1986.

Since the reunification, the Naval Aviation Organization has been internally rearranged several times in an attempt to find a structure that best fits its organizational requirements. This structural experimentation was the genesis of this study.



Naval Air Support Command Organizational Chart
Figure 6

IV. GENERAL APPROACHES TO ORGANIZATIONAL STRUCTURE

With the purpose of obtaining better performance results, organizations throughout their existence have tried different structural arrangements in accordance with current pursued goals, and demands, constraints and opportunities offered by the environment.

In this Chapter, the three basic organizational arrangement currently in use--Functional, Divisional, and Matrix--will be addressed as a background reference for the structural analysis that will follow in the subsequent Chapters.

A. FUNCTIONAL ORGANIZATION

This structural arrangement follows along the lines of the different specialized skills of the members of the organization. In a typical industrial organization the specialties included are research, manufacturing, engineering, sales, personnel, finance, etc.

This type of organization is used mainly by firms that offer a limited line of products [Ref. 8:p. 248]. A typical functional arrangement is shown in Figure 7.

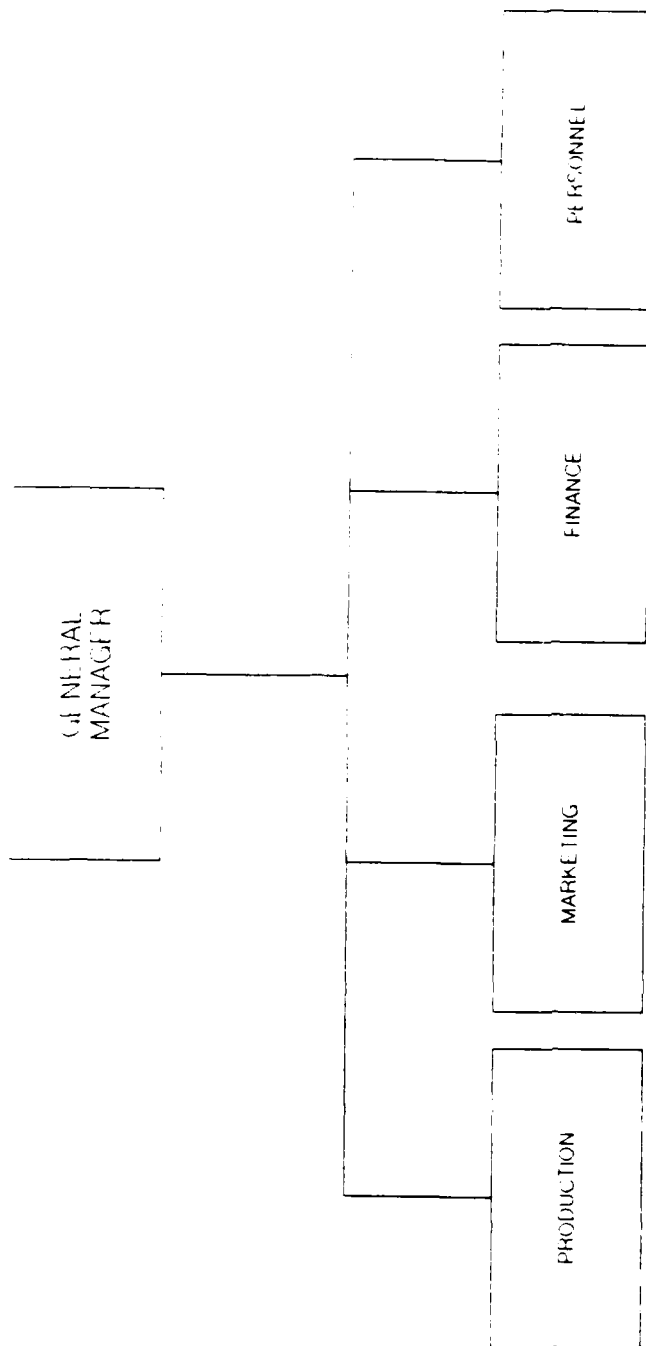
Reference 4 page 222 lists some advantages and disadvantages of the functional organization.

1. Advantages

- . Foster professional identity and career paths for members.
- . Ease of supervision.
- . Allows maximum specialization in trained occupational skills.
- . Other departments have access to specialized skills.

2. Disadvantages

- . Creates major differences between departments.
- . Conflicts take longer to resolve.



A Typical Industrial Functional Organization

Figure 7

- . Responsibility for performance is difficult to trace.
- . Fails to develop well-rounded top managers.

B. DIVISIONAL ORGANIZATION

As the organization grows and more line products are added the functional organization becomes inappropriate to handle the more complex and complicated requirements demanded from the different products or tasks of the organization.

One way to solve this problem has been to create self-contained divisions within the organization, where each department contains all of the functional skills needed to perform the tasks of that department. This, of course, reduces the dependence on other departments, and top decision makers [Ref. 4:p. 216]. A typical divisional arrangement is shown in Figure 8.

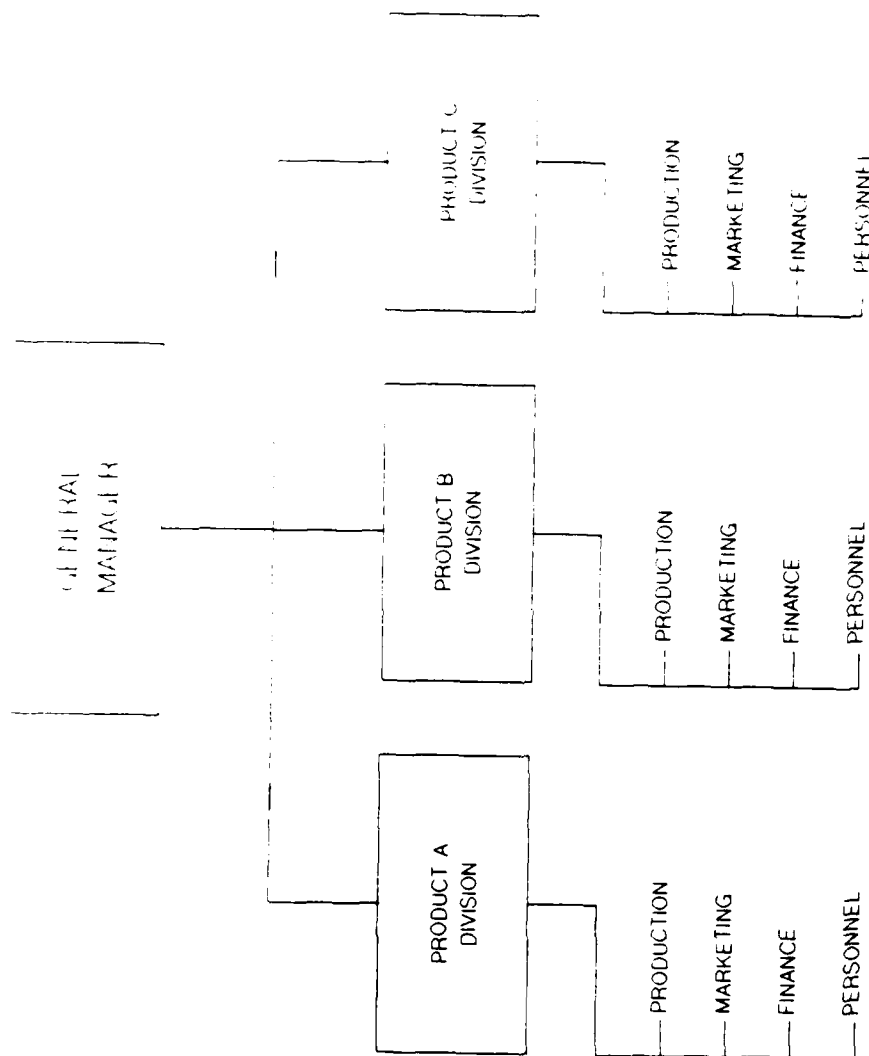
Reference 4 page 222 lists some advantages and disadvantages of the program (self-contained) organization.

1. Advantages

- . Simplifies coordination among functions.
- . Permits large growth without loss of control.
- . Allows the unique needs of products, areas, or clients to receive special attention.
- . Permits accountability for performance.
- . Divisional goals are clear, providing motivation for divisional management.
- . Decision authority is moved closer to the problem.

2. Disadvantages

- . Duplication of resources between departments.
- . Reduces specialization in occupational skills.



A Typical Industrial Divisional Organization
Figure 8

- . Encourages competition among divisions.
- . Encourages sub-optimization⁴.

C. MATRIX ORGANIZATION

This is a combination of the two other basic arrangements. This arrangement is mainly used when the organization's needs for high quality (functional) and efficient application to a product or service (self-contained) are equally important for successful performance. Matrix organization creates lateral lines of authority in addition to the existing vertical ones. This type of arrangement is a distinct departure from traditional principles of organization [Ref. 4:p. 252]. A typical matrix arrangement is shown in Figure 9.

Reference 8 page 254 lists some advantages and disadvantages of the matrix organization.

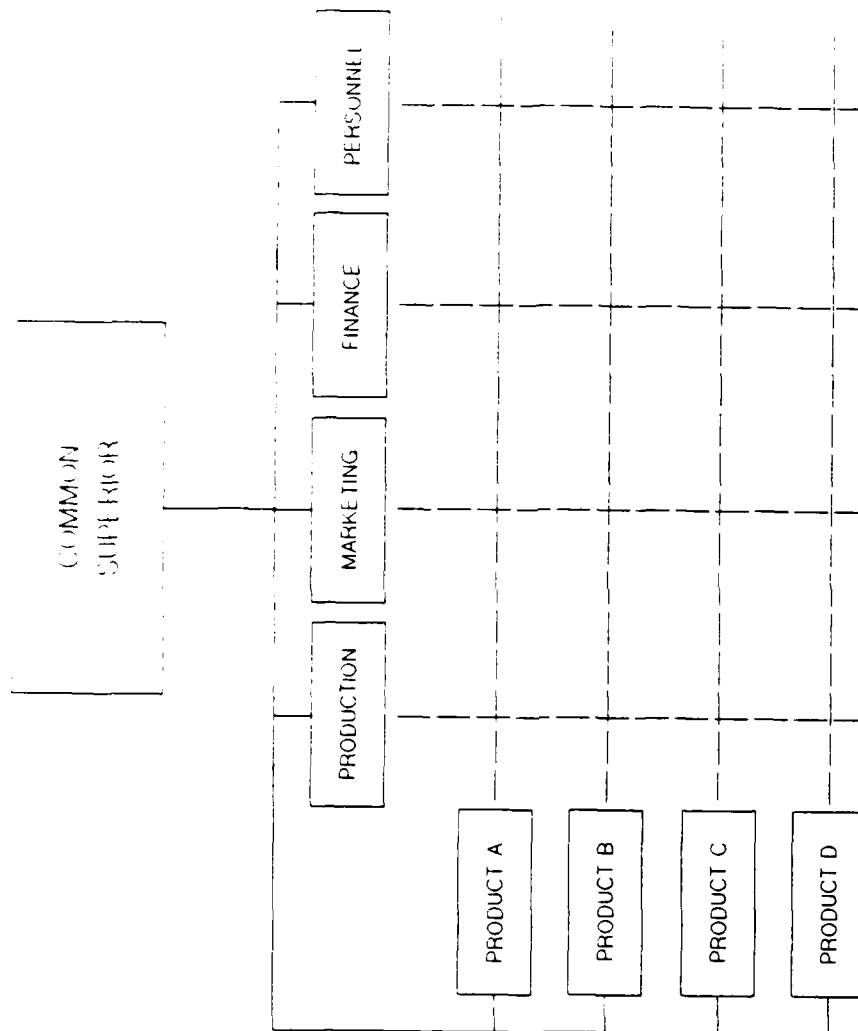
1. Advantages

- . Gives flexibility to organization.
- . Stimulates interdisciplinary cooperation.
- . Involves and challenges people.
- . Develops employee skills.
- . Frees top management for planning.
- . Motivates people to identify with end products.
- . Allows experts to be moved to crucial areas needed.

2. Disadvantages

- . Risks creating a feeling of anarchy.
- . Encourages power struggles.
- . May lead to more discussion than action.
- . Requires high interpersonal skills.
- . Is costly to implement.
- . Risks duplication of effort by project teams.

⁴ "Sub-optimization refers to the achievement of sub-goals by groups or departments, to the exclusion or ignorance of overall organizational goals"[Ref. 4:p. 177]



A Typical Industrial Matrix Organization
Figure 9

- . Affects morale when personnel are rearranged.

D. CHAPTER SUMMARY

In summary, it may be said that the use of the three basic different structural organizational arrangements depends upon the current situation facing the organizations and their trade-offs.

The functional structure economizes resources, allows development of specialized skills. The decision-making authority is highly centralized at the top of the organization. It best fits an environment that is quite simple and stable.

The divisional structure introduces the concept of decentralization, pushing the decision-making authority to lower levels in the organization. It increases the sub-unit autonomy, but duplication of resources is likely. It best fits a quite complex and dynamic environment.

The matrix structure tries to exploit the advantages of the functional and divisional structures by overlaying functional departments with project teams. Its effectiveness depends on teamwork rather than on formal authority. This type of structure is best suited for a highly complex, segmented and dynamic environment that requires quick response. Its most salient characteristic is the dual authority exerted by the functional and project manager over those working in the matrix unit.

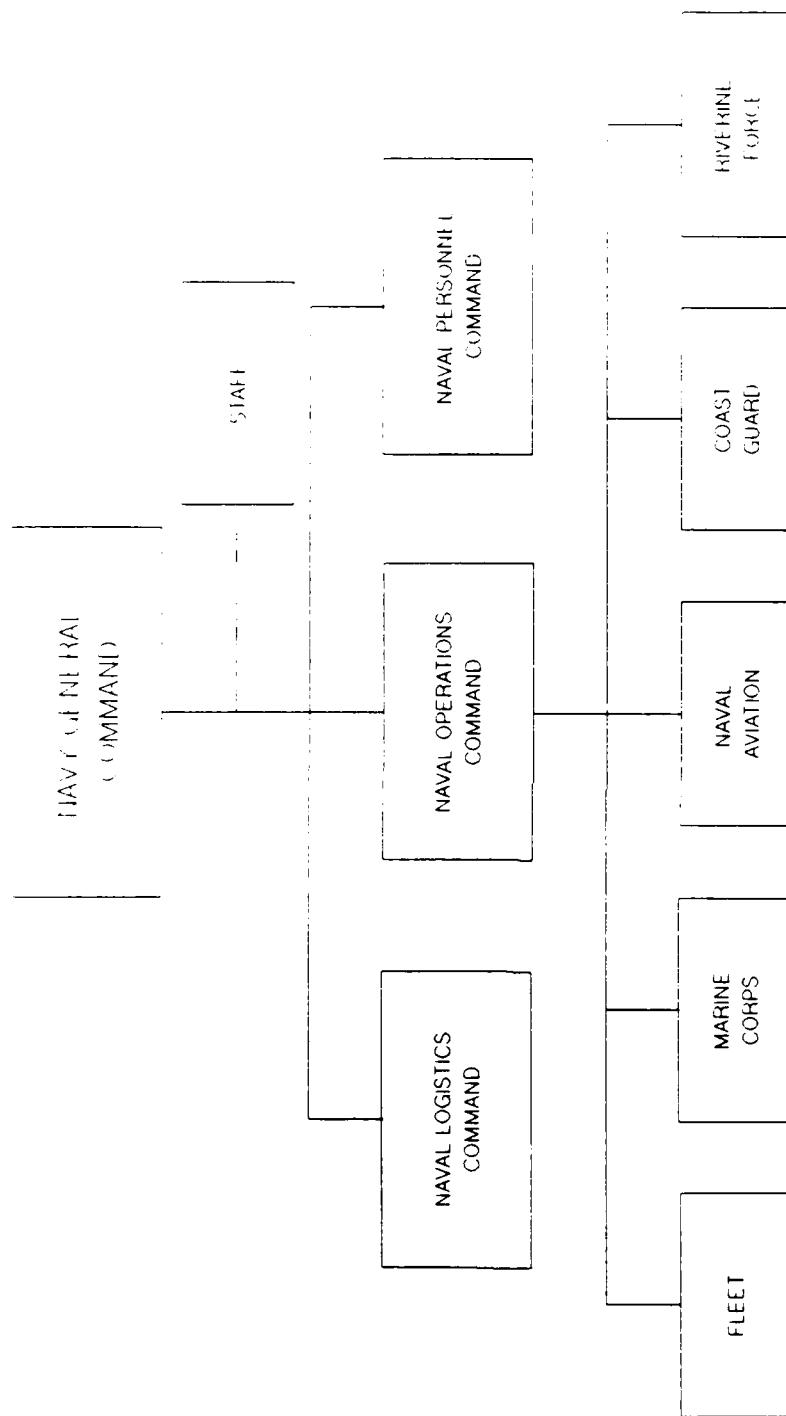
V. ANALYSIS OF THE VENEZUELAN NAVAL AVIATION ORGANIZATION

A. PURPOSE

In accordance with the Venezuelan Navy Organizational Manual [Ref. 9] established in compliance with Defense Ministry Resolution M-0852 01 JUL 1985, the Venezuelan Naval Aviation Organization is an Operational Command under the authority of the Chief of Naval Operations in parallel with the other four major operational commands: Fleet, Marine Corps, Coast Guard, and Riverine Force. Figure 10 depicts a simplified Macro-Organization of the Venezuelan Navy, illustrating the location of the Naval Aviation Command.

The same document on page 27 states the mission of the Venezuelan Naval Aviation which is to prepare and direct their aviation assets to contribute to the conduct and execution of Naval Air Operations, Anti-Submarine Warfare, and Air Transportation Support. "Alistar y conducir sus unidades con el fin de contribuir a la conduccion y ejecucion de operaciones aeronavales, antisubmarinas y de apoyo de transporte aereo."

This mission, as stated, lends support to the general guidelines of the development of this highly specialized branch of Naval Aviation, not only in the tactical area, but also in the administrative area of transportation. Hence, it could be said that the purpose of the Venezuelan Naval Aviation Organization is to develop the air branch of the navy as a complement to the other operational commands in pursuing the strategic objectives of the Venezuelan Navy.



Venezuelan Navy Macro Organization

Figure 10

B. ENVIRONMENT

The environment is an important factor to be considered in any organizational analysis. It refers to the surroundings affecting and shaping the organization as a whole. Environment affects the size, internal detail, task differentiation, and many other aspects of the enterprise [Ref. 10:p. 140].

In this analysis, the concept of task environment stated by Robert Duncan as "... that part of the environment defined by managers as relevant or potentially relevant for organizational decision making" was employed. The following environmental factors were considered:

1. User Factor

The flight hours flown by naval aviation are mainly in support of the different operational, administrative, and staff components of the navy, as well as from requirements from other branches of the Armed Forces, Governmental Agencies and institutions, and private institutions, approved by the naval command. These nation-wide requirements create the need to operate in different geographical environments far apart, and around the clock under all weather conditions.

2. Supply Factor

Because of the type of technology involved in the operation of aviation units, the Venezuelan Naval Aviation Organization is highly dependent on foreign suppliers of spare parts as well as on the transfer of technology. The different types of aircraft possessed by the organization multiply the number of suppliers needed, demanding a very efficient method to control the process of acquisition, storage, and delivery of spare parts.

The labor supply of highly specialized personnel is acquired from navy resources, which Naval Aviation has to compete for against the other components of the Navy, especially the fleet. Essentially no primary training is provided within the Naval Aviation at any level.

3. Technological Factor

The operation of the aviation units is based on two main components: Airframes and Propulsion systems, which essentially just get the airplane into the air, and the avionics⁵ component, which enhances the effectiveness and the efficiency of the flight. These two components, especially avionics, are in constant striving towards more efficiency, reliability and maintainability. These changes require sophisticated technology which is difficult to find on the national soil. A process of technology transfer is required from the different aviation systems acquired by the navy.

4. Economical and Sociopolitical Factor

As a democratic country, the development of any component of the Armed Forces must pass through a bureaucratic process. The rate of acquisition of new resources has to be justified and approved by upper echelons of command including the Congress when major decisions have to be made. On the other hand, because its a non-profitable type of organization, the macro economical situation of the country, which limits the government budget, places an important constraint over any decision concerning development of Naval Aviation.

It can be concluded from this analysis, that the environment surrounding the Naval Aviation Organization is somewhat complex, because of a variety

⁵ Avionics. Electronics as applied in aviation and astronautics.

of factors considered for decision making, and dynamic because of continuous and unexpected changes such as changes in the money exchange rate used to import spare.[Ref. 2:p. 63]

C. FORMAL ORGANIZATION

To accomplish the purpose of Venezuelan Naval Aviation within the environment just described, a formal organization was established which is explained in the following paragraphs:

1. Organizational Goals

The goals of an organization are those sets of activities that have to be performed in order to meet the mission of the organization. The accomplishment of the mission in turn insures compliance with the general purpose of the organization.

The specific goals of any organizational unit are those that distinguish one unit from other parallel units.

Reference 9 on page 28 states the specific goals to be accomplished by the Naval Aviation Command in fulfillment of its mission. Those specific goals considered are:

- . To provide equipped and trained aviation units to execute Naval Air Operations.
- . To establish a tactical employment policy for the aviation units to achieve this set objectives.
- . To keep higher commands informed of the movement and readiness status of the aviation units.
- . To assess the current tactical and doctrinal procedures in order to recommend to the higher command any possible improvements.
- . To program and execute training, operational, and support activities, ensuring the optimization of the Naval Aviation Units.
- . To maintain a high readiness status and combat capability of the aviation units.
- . To guarantee the safety and maintenance of war material, support equipment, and aviation units belonging to Naval Aviation.

- . To provide relevant information for improving the naval supply and maintenance system.
- . To maintain close coordination with other operational commands for planning and execution of combined Naval Air Operations.

2. Organizational Structure

To achieve the purpose of Venezuelan Naval Aviation, the current organizational structure was established in accordance with the Naval General Headquarters Command resolution I-398 17 February 1987 as follows:

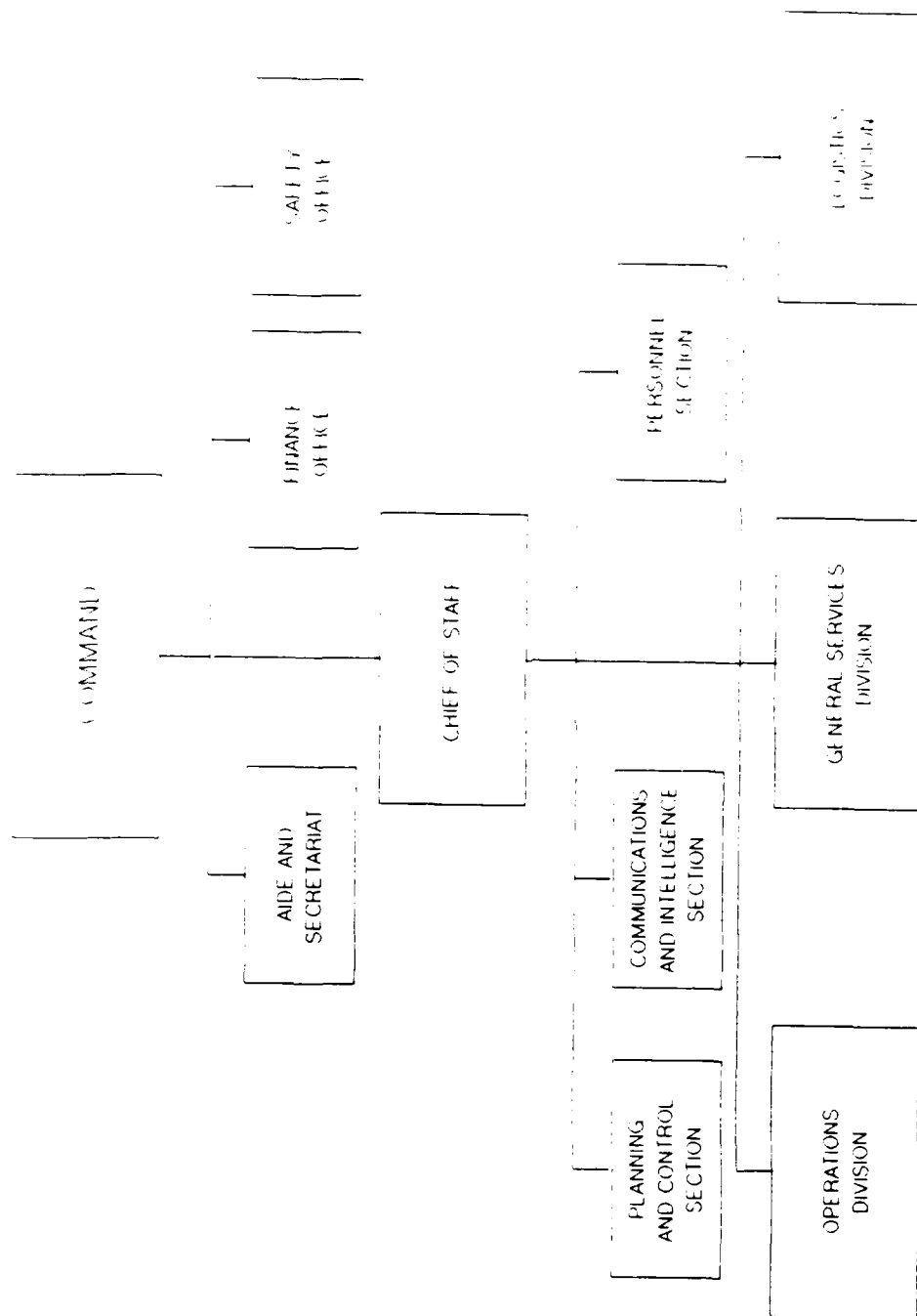
- . Command
 - Aide and Secretariat Office
 - Finance Office
 - Safety Office
- . Staff
 - Planning and Control Section
 - Personnel Section
 - Communication and Intelligence Section
- . Operations Division
 - Training Department
 - Flight Control Department
 - Patrol Squadron
 - Transport Squadron
 - Helicopter Squadron
- . General Services Division
 - Base Defense Department
 - Base Support Department
 - Facilities Maintenance Department
- . Logistics Division
 - Maintenance Department
 - Supply Department

Figure 11 depict the current organizational chart.

This organization is geographically spread out in two locations. Puerto Cabello⁶, the main base where most of the units are stationed. Caracas, the home city for The Alpha Support Group, sub-unit of the Transport Squadron.

To analyze this organization, three main areas were considered: Command and Staff, Operational, and Logistical areas. Each main area is described by the basic function of its component units and the work

⁶ Puerto Cabello is a city on the coastline 65 miles west of Caracas, capital city of Venezuela.



Naval Aviation Organization

Figure 11

relationship established within the organization. The description that follows is based on the document cited in Reference 11 and interviews with the officers in charge of the main units of the organization.

a. Command and Staff Area

(1) Command. It is accomplished by the Commander of Naval Aviation, an officer with the rank of Rear Admiral. His basic function is related to the exercise of military command⁷ over assigned units to fulfill the mission of Naval Aviation.

The Commander of Naval Aviation reports to the Chief of Naval Operations as shown in Figure 10. Figure 11 depicts the downward relationship where three Office Heads (Aide & Secretariat, Finance, Safety) report directly to the Commandant and a Chief of Staff assists and advises him in carrying out his duties.

The offices under direct command of the Commandant have the following basic functions:

(a) Aide and Secretariat Office. The aide and the secretary provide personal and secretarial assistance to the Commander of Naval Aviation.

(b) Finance Office. The finance Officer assists and advises the Commander of Naval Aviation in matters related to the execution and control of the operational funds assigned to the Naval Aviation Command. Additionally, he handles the supply of general use material.

(c) Safety Office. Headed by the safety officer who is responsible for coordinating the implementation of a comprehensive safety program based

⁷ Military Command: includes the authority and responsibility for effectively using available resources and for planning the employment of, organizing, directing, coordinating, and controlling military forces for the accomplishment of assigned mission. [Ref. 1:p. 1-4]

on objectives set by the Commandant, encouraging cooperation in safety matters at all levels, insuring wide distribution of safety information, monitoring the submission of operational hazard reports, and maintaining appropriate safety records and statistics.

Both the finance and the safety officer report to the Chief of Staff for administrative matters unrelated to their functional role.

(2) Staff. The staff is headed by a navy Captain as Chief of Staff who assists and advises the Commander of Naval Aviation in the performance of his duties. Also, the Chief of Staff acts as executive officer for the organization, acting as the main coordinating mechanism for the successful accomplishment of duty obligations, and the good order and discipline of the entire command.

As shown in Figure 11, the Chief of Staff reports directly to the Commandant, and receives reports pertaining to all matters by the chiefs of the different sections of the staff; this, of course, does not prevent any member of the staff from presenting his viewpoint to the commander on any subject over which he has cognizance.

All other Division Heads report to the Chief of Staff regarding internal administration of the command.

The sections comprising the Naval Aviation Staff have the following basic function and relationships:

(a) Planning and Control Section.

. Basic Function. Advises and assists the Chief of Staff in formulating and controlling the implementation of plans related to all kinds of air operational activities for the entire command.

. Organizational Relationships.

The planning and control officer reports to the Chief of Staff and receives reports regarding the execution of air operations from the Operations Division Officer.

(b) Personnel Section.

. Basic Function. Advises and assists the Chief of Staff in the execution of the naval personnel management policy in regards to: personnel placement, morale and discipline, welfare, planning and control of training programs, personnel appraisal, and issues dealing with the different duty roles of the Naval Aviation Headquarters.

. Organizational Relationships.

The personnel officer reports to the Chief of Staff regarding the performance of his duties, and maintains informal relationships with the different units regarding routine administration of personnel.

(c) Communication and Intelligence Section.

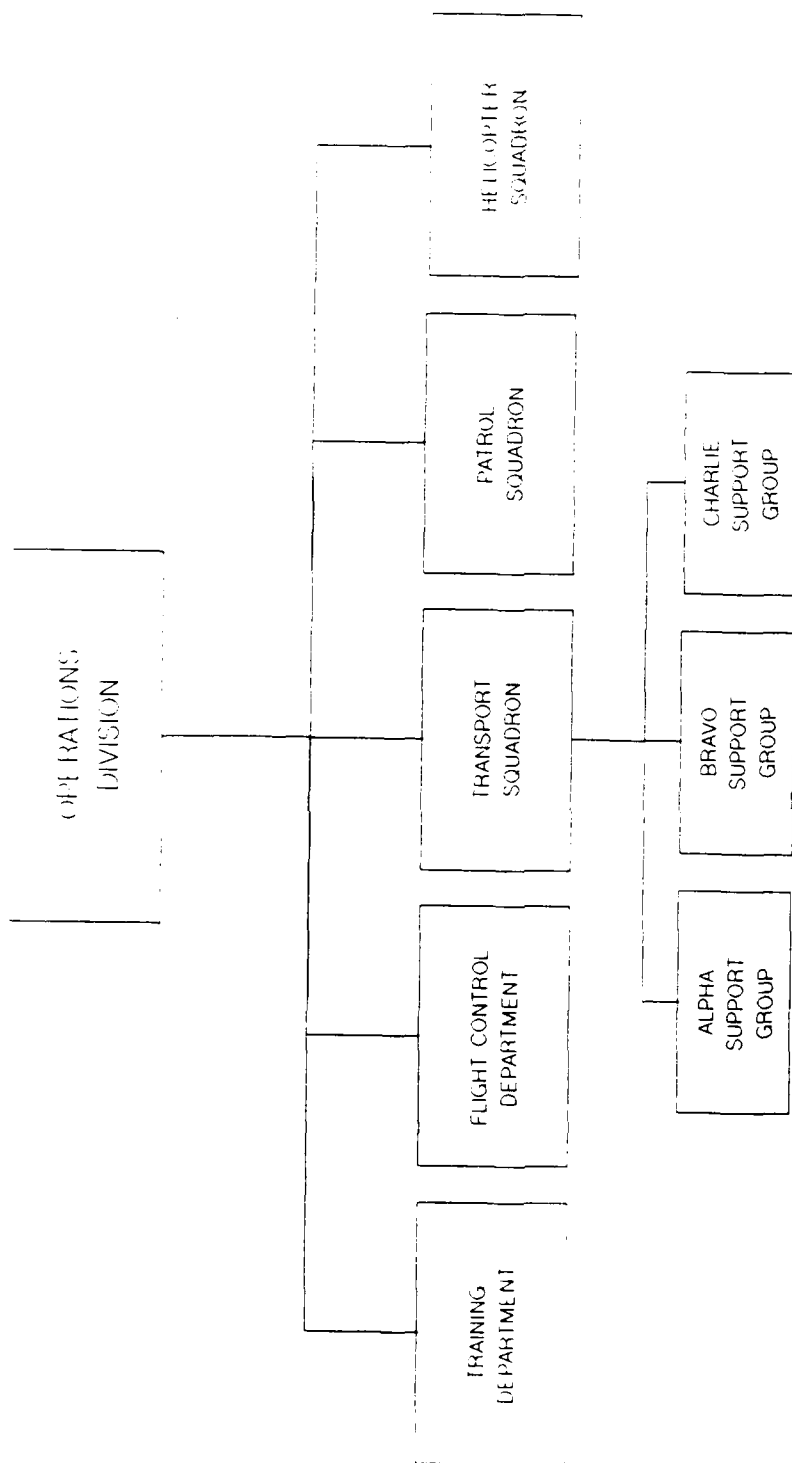
. Basic Function. The communication officer, depending on message classification, is responsible for handling the different channels of naval communications with accuracy, speed, and security; also, assists the command in collecting and processing information to obtain intelligence reports.

. Organizational Relationships.

The communications officer reports to the Chief of Staff regarding performance of his duties, and maintains a close relationship with the Naval Air Squadrons.

b. Operational Area

The Operational Area is composed of The Operations Division as shown in the organizational chart depicted in Figure 12.



Operations Division Organization
Figure 12

(1) Operations Division.

. Basic Function. This unit handles the planning and execution of operational orders by the Naval Air Squadrons, maintaining strategic control over deployed airborne units. Ensures that the operational units comply with the safety, security, and performance requirements.

. Organizational Relationships. The Division Head reports to the Commander of Naval Aviation in regards to the operational readiness of the different squadrons. He also reports to the Chief of Staff for all administrative matters and keeps him informed of any direct reports made to the Commandant. The following units fall under his command:

(a) Training Department.

. Basic Function. This department accomplishes the planning, execution, coordination, and control of ground and air training of air crews flying the different types of naval aircraft, ensuring that all crew members comply with the minimum requirements set forth in the corresponding Flight and Operating Instruction Manuals.

. Organizational Relationships. The Department Head reports to the Operations Division Head and maintain close coordination with the Squadron Commanding Officers.

(b) Flight Control Department.

. Basic Function. This department is tasked to control the execution of flight programs, maintain current flight records on squadron air crew, ensure standardization of flight standard procedures, maintain updated aeronautical information and coordinates the flight program with the Training Department.

. Organizational Relationships.

The Department Head reports to the Operations Division Head, and maintains close coordination with the Squadron Commanding Officers and the Training Department Head.

(c) Transport Squadron.

. Basic Function. Perform executive and passenger transportation, tactical transport, and freight flights as tasked by the higher command, while maintaining a high readiness state.

. Organization Relationships.

The Squadron Commanding Officer reports to the Operations Division Head, and keeps in close contact with the maintenance Department regarding aircraft availability. As shown in Figure 12, he has under his command three sub units functioning as follows:

* Alpha Support Group.

. Basic Function. Perform executive flights in support of the top ranking, officers of the Navy, while maintaining a high readiness state.

. Organizational Relationships. The Group Head reports to the Squadron Commanding Officer in accordance with the organizational chart; however, due to the mobility of this unit and the remote geographical location far from the Transport Squadron post, there is normally a flow of information directly to the Commander of Naval Aviation. Also, the Group Head receives flight requests directly from the Naval General Headquarters.

* Bravo Support Group.

. Basic Function. Perform passenger, tactical transport, and freight flights, maintaining a high readiness state.

. Organizational Relationships. The Group Head

reports to the Squadron Commanding Officer.

* Charlie Support Group.

. Basic Function. To provide maintenance and flight dispatch support to transient naval aircraft at "Simon Bolivar" International Airport.

. Organizational Relationships. The Group Head reports to the Squadron Commanding Officer.

(d) Patrol Squadron.

. Basic Function. Perform anti-submarine, search and rescue, and maritime patrol flights while maintaining a high readiness state.

. Organizational Relationships. The Squadron Commanding Officer reports to the Operations Division Head, and maintains close coordination with the Maintenance Department regarding availability of aircraft.

(e) Helicopter Squadron.

. Basic Function. Perform anti-submarine and anti-surface vessel support in close proximity to the fleet units, while maintaining a high readiness state.

. Organizational Relationships. The Squadron Commanding Officer reports to the Operations Division Head, and maintains close coordination with the Maintenance Department regarding availability of helicopters.

c. Logistics Area

The logistics area includes the General Services Division and the Logistics Division depicted in Figures 13 and 14.

(1) General Services Division.

. Basic Function. Planning, direction, and control of all activities to ensure

proper utility services, transport and fuel services, messing services, lodging services, physical security, and maintenance of the facilities.

. Organizational Relationships. The Division Head reports to the Commander of Naval Aviation on matters specifically related to the readiness of his division, and to the Chief of Staff for administrative matters keeping him informed of any direct reports made to the Commandant. He has under his command three departments, as shown in Figure 13.

(a) Base Defense Department.

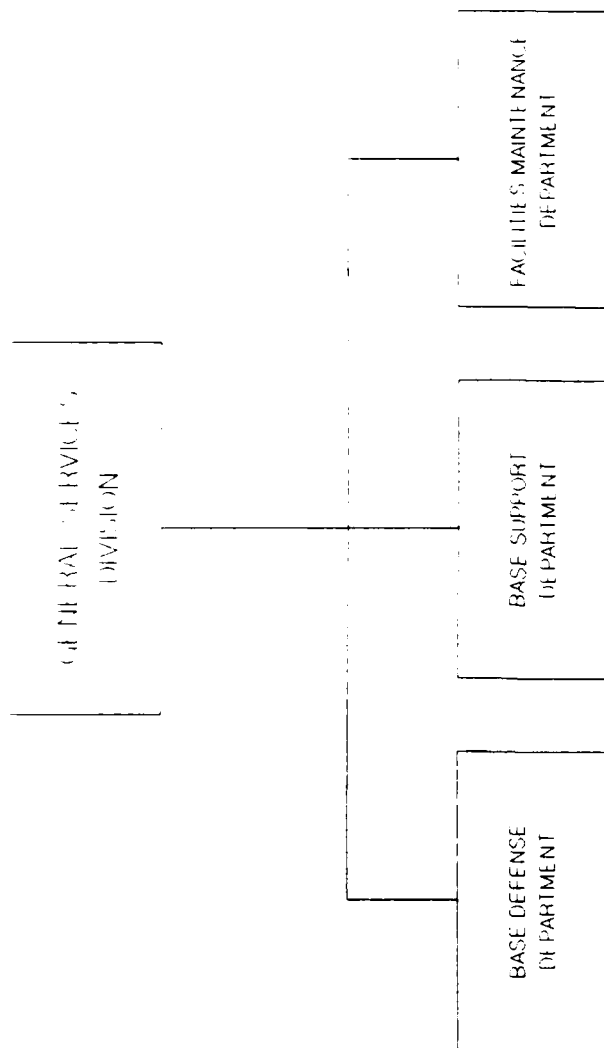
. Basic Function. Provides sufficient security to personnel, facilities, material, and aircraft stationed at the Naval Aviation main base, to maintain an active General Quarter Defense posture.

. Organizational Relationships. The Department Head reports to the General Services Division Head, and maintains close coordination with the personnel officer in matters related to daily duty assignments and personnel training with personal weapons.

(b) Base Support Department.

. Basic Function. Provides adequate service support in matters related to messing, lodging, transport, and vehicle/aircraft fuel supply. Ensures proper compliance with the established hygienic and safety rules.

. Organizational Relationships. The Department Head reports to the General Services Division Head, maintaining close coordination with the Supply Department in matters related to fuel acquisition.



General Services Division Organization

Figure 13

(c) Facilities Maintenance Department.

. Basic Function. Ensures proper maintenance of Naval Aviation main base facilities including buildings, utility services, green areas, and internal roads.

. Organizational Relationships.

The Department Head reports to the General Services Division Head.

(2) Logistics Division. The general organization of the Logistics Division is depicted in Figure 14.

. Basic Function. Planning, execution, and control of all activities related to supply and maintenance of the aircraft assigned to the Naval Aviation Command.

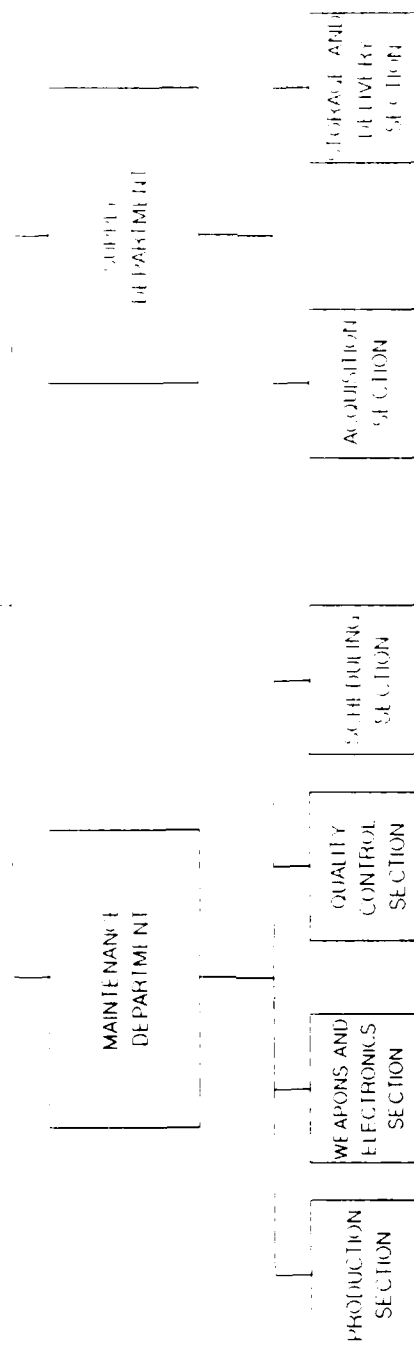
. Organizational Relationships. The Division Head reports to the Commander of Naval Aviation regarding the readiness of the division, that is, the general condition of the machinery, including the requirements and status of major repairs. Also, he reports to the Chief of Staff on administrative matters keeping him informed of any direct reports made to the Commandant. He has under his command two departments as shown in Figure 14.

(a) Maintenance Department.

. Basic Function. Scheduling, execution, and control of maintenance at organizational⁸, intermediate⁹, and depot¹⁰ level

⁸ Organizational Level: "Maintenance ... is limited to periodic checks of equipment performance, visual inspections, cleaning of equipment, some servicing, external adjustments, and the removal and replacement of some components." [Ref. 12:p. 108]

⁹ Intermediate Level: "At this level, end items may be repaired by the removal and replacement of major modules, assemblies, or piece parts. Scheduled maintenance requiring equipment disassembly may also be accomplished." [Ref. 12:p. 108]



Logistics Division Organization
Figure 14

(when possible) of power plants, airframe structures, hydraulic systems, electro-mechanics systems, avionics equipment, weapons systems, and survival equipment for the different types of aircraft assigned to the Naval Aviation Command.

. Organizational Relationships.

The Department Head reports to the Logistics Division Head, maintaining close coordination with the Supply Department and especially with the Squadron Commanding Officers on matters related to the daily assignment of operational aircraft. He has under his authority four sections as shown in Figure 14, functioning as described below:

* Production Section.

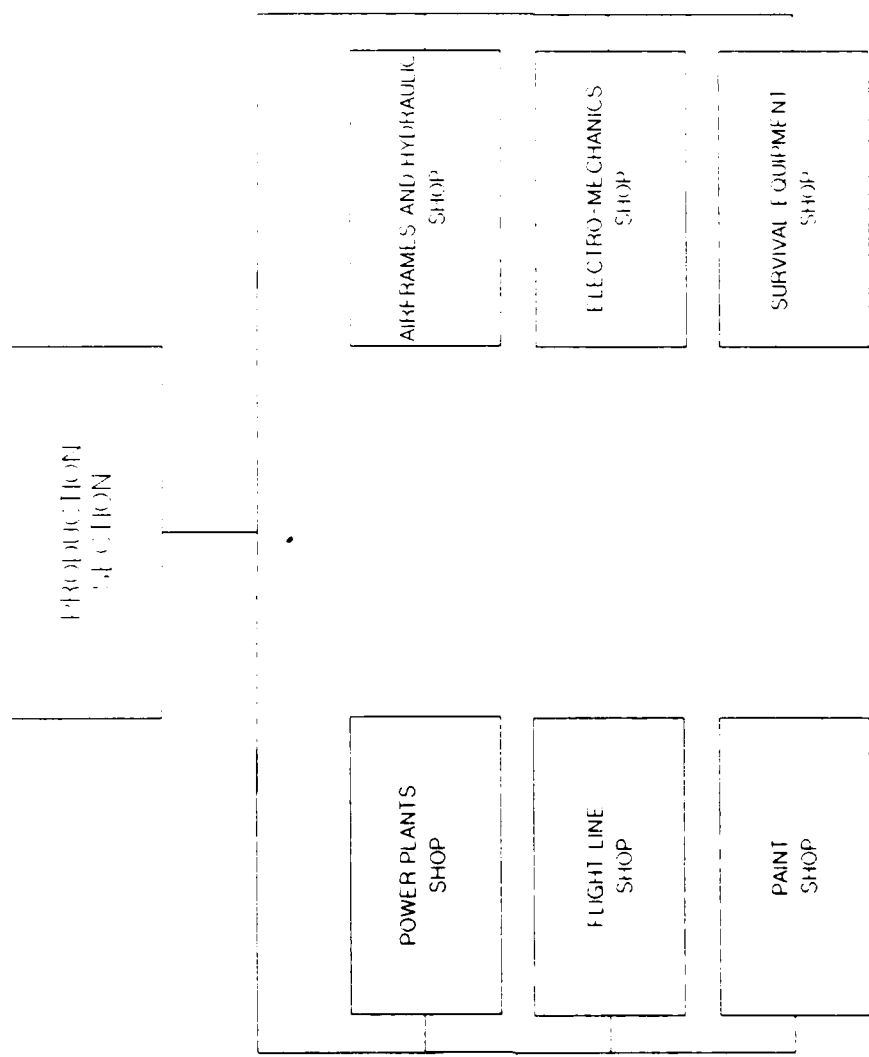
. Basic Function. Executes and controls the general maintenance of the different types of naval aircraft and ground support equipment, providing the technical personnel required for Squadron detachments.

. Organizational Relationships. The Section Head reports to the Maintenance Department Head and receives reports from the Shop Heads under his authority as shown in Figure 15 and described in Table I. Also, he maintains a close relationship with Quality Control and scheduling Sections regarding assignments and job control.

* Weapons and Electronics Section.

. Basic Function. Executes and controls the maintenance, repair, and adjustment of the avionics and weapon systems for the different

¹⁰ Depot Level: "... includes the complete overhauling, rebuilding, and calibration of equipment as well as the performance of highly complex maintenance actions." [Ref. 12:p. 109]



Production Section Organization
Figure 15

TABLE I
PRODUCTION SECTION SHOPS

Paint Shop.	<p>. Basic Function. Executes, and controls anti-corrosive paint treatments, as well as decorative painting of the naval aircraft and their components in accordance with technical specifications and standards.</p> <p>. Organizational Relationships. The Shop Head reports to the Production Section Head.</p>
Flight Line Shop.	<p>. Basic Function. Support the aircraft on the Flight line through daily pre-flight and post-flight inspections, oil refills and refueling, and pre-take off troubleshooting.</p> <p>. Organizational Relationships. The Shop Head reports to the Production Section Head.</p>
Power Plants Shop.	<p>. Basic Function. Executes maintenance and repair of the aircraft power plants as assigned.</p> <p>. Organizational Relationships. The Shop Head reports to the Production Section Head.</p>

TABLE I
(continued)

Airframes
and
Hydraulic
Shop

. Basic Function. Executes maintenance and repair as well as removal and replacement of parts for the different naval aircraft.

. Organizational Relationships. The Shop Head reports to the Production Section Head.

Electro-
Mechanics
Shop

. Basic Function. Executes maintenance, repair, and removal and replacement of the electro-mechanical systems for the different naval aircraft.

. Organizational Relationships. The Shop Head reports to the Production Section Head.

Survival
Equipment
Shop.

. Basic Function. Maintains and repairs the individual and shared survival equipment of the entire command.

. Organizational Relationships. The Shop Head reports to the Production Section Head.

naval aircraft, performing research and development to improve the systems.

. Organizational Relationships. The Section Head reports to the Maintenance Department Head and receives reports from the Shop Heads under his authority as shown in Figure 16 and described in Table II.

* Quality Control Section.

. Basic Function. To assure the compliance with all procedures, inspections, examinations, and tests required to guarantee a high standard of maintenance of naval aircraft.

. Organizational Relationships. The Section Head reports to the Maintenance Department Head. Members of this section perform a supervisory role over the people of the different shops concerning job quality assurance.

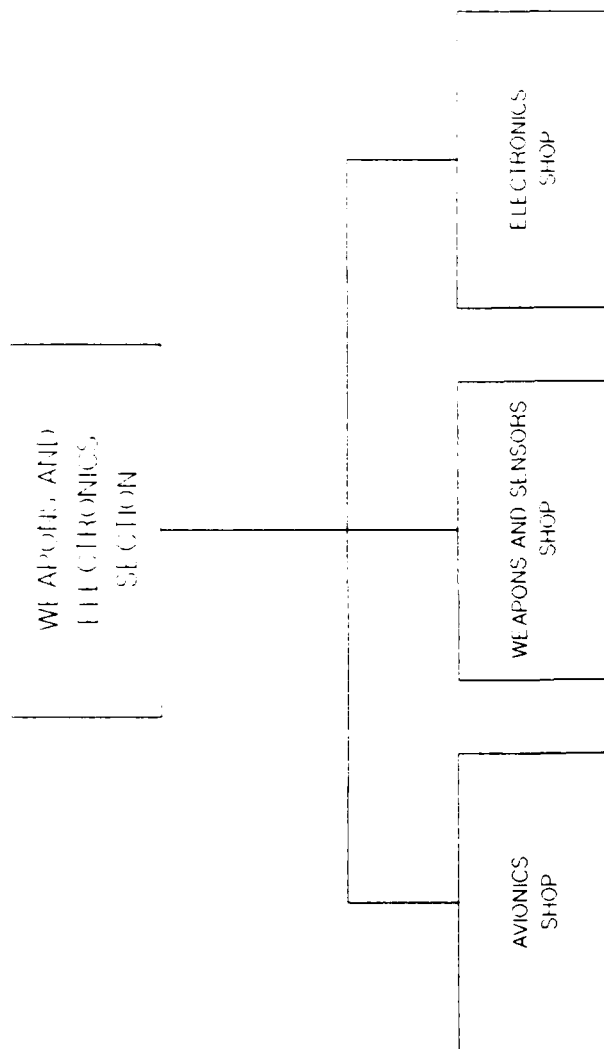
* Scheduling Section.

. Basic Function. Plans and Controls the execution of scheduled and un-scheduled maintenance of naval aircraft, ensuring proper material support and documentation.

. Organizational Relationships. The Section Head reports to the Maintenance Department Head. Also, he keeps a close relationship with the different shops regarding control of the progress of jobs in work.

(b) Supply Department.

. Basic Function. Scheduling, execution, and control of all activities related to procuring, receiving, storing, issuing, and shipping aircraft spare parts and general use material, acquisition of fuel and oil, and custody control of naval assets.



Weapons and Electronics Section Organization

Figure 1b

TABLE II

WEAPONS AND ELECTRONICS SECTION SHOPS

Avionics Shop.	<p>. Basic Function. Executes maintenance, repair, and parts replacement for the communication and navigation equipment (VHF, VOR ...) on the different types of aircraft.</p> <p>. Organizational Relationships. The Shop Head reports to the Weapons and Electronics Section Head.</p>
Weapons and Sensors Shop.	<p>. Basic Function. Executes maintenance, repair, and parts replacement of the weapon and sensor equipment (radars, sonars ...) on the naval aircraft.</p> <p>. Organizational Relationships. The Shop Head reports to the Weapons and Electronics Section Head.</p>
Electronics Shop.	<p>. Basic Function. Executes maintenance, repair, and parts replacement of the electronic control equipment on the naval aircraft.</p> <p>. Organizational Relationships. The Shop Head reports to the Weapons and Electronics Section Head.</p>

. Organizational Relationships.

The Department Head reports to the Logistics Division Head, keeping in close coordination with the Maintenance Department Head. He has under his authority two sections as shown in Figure 14, functioning as described below:

* Acquisition Section.

. Basic Function. Schedules and Processes all supply requirements in order to maintain an adequate operational readiness status for Naval Aviation.

. Organizational Relationships. The Section Head reports to the Supply Department Head.

* Storage and Delivery Section.

. Basic Function. Receives, stores, issues, and ships parts to support the maintenance functions, keeping an updated storage parts record.

. Organizational Relationships. The Section Head reports to the Supply Department, maintaining a close relationship with the Maintenance Department in matters related to issuing and receiving parts.

3. Technology of the Organization

The Naval Aviation Organization, as it is today, acquires personnel already trained in the basic skills from outside sources. For instance, pilots are trained by the Venezuelan Air Force, technicians are trained in centralized navy technical schools, etc. After reporting to the organization, personnel receive on the job training, and special programmed training to upgrade their skills. These personnel work to produce the main output of the Naval Aviation organization, which is the availability and employment

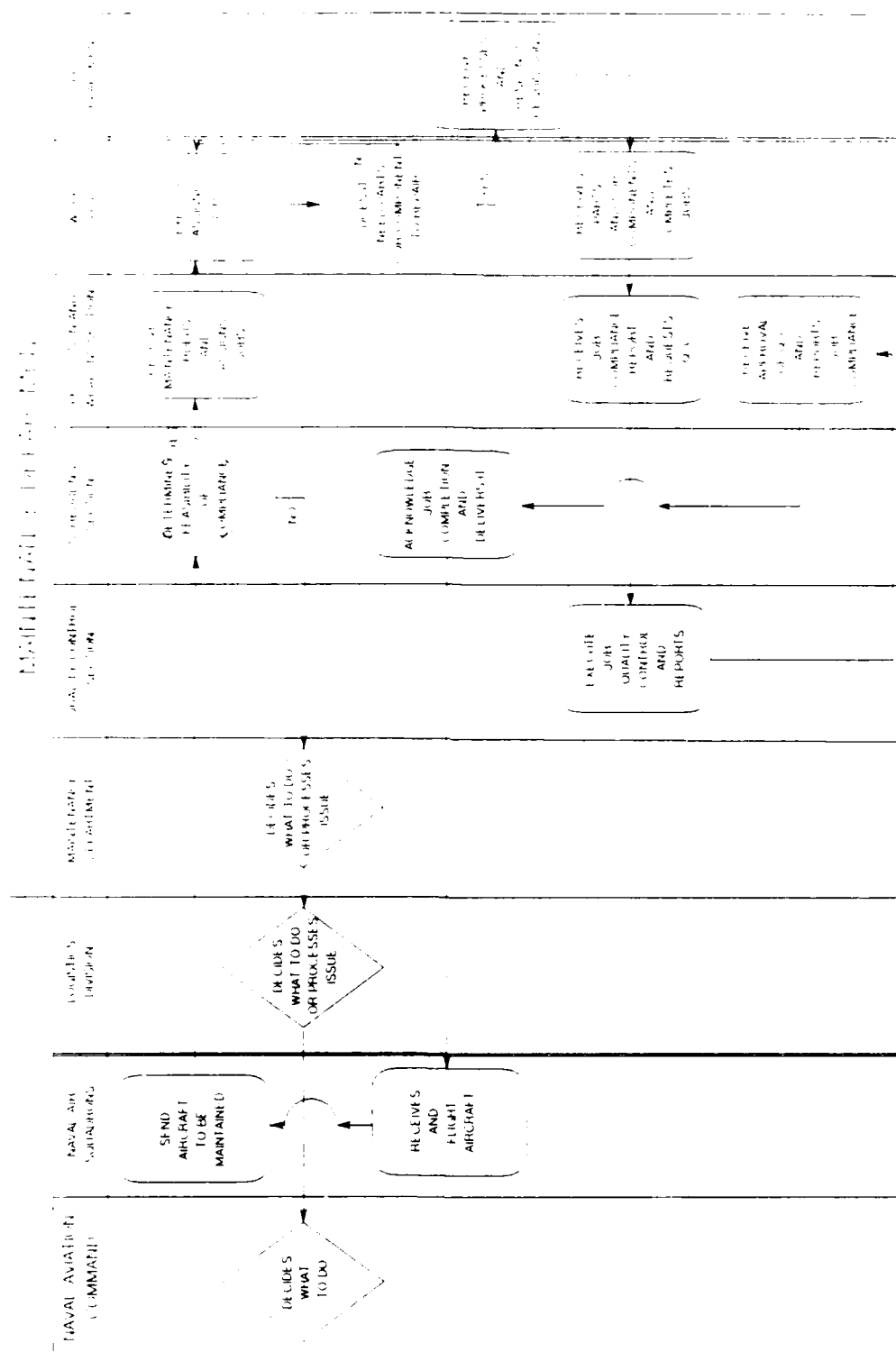
of the flight hours necessary to fulfill the flight requirements set forth by the Navy.

This output of the Naval Aviation Organization requires the input of aircraft, tools and equipment, spare parts, technical personnel, and a viable work process to provide aircraft ready to fly and then being flown by the pilots from the squadrons.

This work process involves three main components with the following work flow:

The Squadron Unit (See Figure 12), once the aircraft have been flown, input the aircraft to the Maintenance Department for repairs and/or routine/scheduled maintenance. The Maintenance Department has the tools and equipment as well as the technical personnel, but it needs to coordinate with the Supply Department for supplies of required spare parts. Once the spare parts are obtained technical personnel apply their skills, tools, and equipment to provide the availability of flight hours. Squadron pilots fly the aircraft again and the process is repeated. See Flowchart No 1 for more details.

This work flow establishes a clear sequential interdependence running from the Supply Department, which provides the spare parts, to the Maintenance Department, which uses the spare parts to fix the aircraft, to the squadrons, which fly the repaired aircraft. Also, it establishes a reciprocal interdependence between the Squadrons and the Maintenance Department. For instance, the Squadrons turn in inoperative aircraft that need repair by the Maintenance Department. The Maintenance Department provides fixed aircraft that are flown by the Squadrons. In the same way, Maintenance and Supply have reciprocal interdependence. Maintenance requests spare parts to repair the aircraft which induces a



Naval Aviation Organization Work Flow

Flowchart No. 1

process within the Supply Department. The Supply Department provides the spare parts that allow the work within the Maintenance Department.

In summary, it may be said that the technology, mainly "engineering" [Ref. 4:p. 143], of the Naval Aviation Organization follows a systematic process that creates sequential and reciprocal interdependence. These types of interdependence relationships requires quite complex and clearly defined coordination.

4. People of the Organization

As in any other naval unit, the people comprising Naval Aviation are composed of three categories depending on their level of knowledge. They are: Officers, who are in charge of the leadership of the organization; Chief Petty Officers, the technical personnel; and the Enlisted personnel, who represent the labor force.

These personnel are molded and trained in their general naval skills at different schools within the navy, depending on their level of knowledge. For instance, Officers are taught at the Naval Academy, Chief Petty Officers at the Chief Petty Officers School, and Enlisted personnel at the Sailors School.

Due to a lack of Naval Aviation training schools, once the people have received their basic naval training they are sent to different aviation schools inside and outside the country. For example, people have been sent to the Venezuelan Air Force Schools, Venezuelan National Guard Aviation Schools, U.S. Naval Air Training Command, Italian Naval Aviation Schools, and so forth.

The training given to Naval Aviation personnel is mainly oriented towards preparing pilots and technicians in one of the two broad specialties of

Venezuelan Naval Aviation, which are fixed wing aircraft, and the rotary wing aircraft (helicopters). These trained people, from different aeronautical schools for background, fill the different posts of the Naval Aviation Structural Organization.

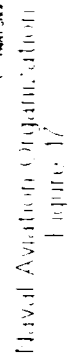
VI. STRUCTURAL PROBLEMS

The fact that the Naval Aviation Organization is surrounded by a complex and dynamic environment means that high uncertainties are created for its commanders [Ref. 2:p. 64].

The way its units are arranged, and how they are interrelated, are important factors which determine the ability of the whole organization to handle the demands, constraints, and opportunities that the environment offers.

In accordance with the "equifinality" characteristic of the organization viewed as an open system, there is no universal or one best way to organize. Different configurations can lead to the same goal [REF. 13: p. 38]. Some structures are more effective and efficient than others depending on their adaptability to the environment. Of course, there are many factors that affect the adaptability of the organization under study. For example, the fact that the people are trained in different aeronautical schools, creates different informal groups with different ways of thinking and approaches to solve aeronautical and administrative problems. Solutions in many cases depend upon the criteria of the predominant group. However, due to the limitations established for this study, the purpose of this Chapter will be to look for those structural deficiencies within the Naval Aviation organization that may be improved upon for the good of the organization.

What comes next is an explanation of the structural problems found in the Naval Aviation Organization (See Figure 17), which may be summarized in the following



categories of problems. Figure 17 will be used as a reference for the discussed problems.

A. MAINTENANCE CENTRALIZATION PROBLEM

There was observed a total dependence of the three Squadrons on a centralized Maintenance Department. Due to their highly operational requirements, the Squadron Commanding Officers based the fulfillment of their basic function mainly on aircraft availability which is determined by the Maintenance Department. However, as shown in the Naval Aviation Organizational Chart, the Squadron Commanding Officers have no formal authority over the Maintenance Department which eliminates the control of the Commanding Officers over the maintenance of their aircraft even at the organizational level.

Interviews with the three Squadron Commanding Officers confirmed a feeling of uncertainty to respond to the daily flight demands. They felt there was an imbalance between their functional responsibilities and the scope of their authority to ensure the aircraft readiness. Also, the three Squadron Commanding Officers agreed that the availability of aircraft did not meet their expectations.

The Helicopter Squadron was the least affected by the maintenance centralization due to the fact that a high proportion of the maintenance people belonged to the rotary wing specialty and also because of the use of a liaison officer to the Maintenance Department.

The issue in the maintenance area raises the question of maintenance centralization versus decentralization. As Newman and Rowbottom state in their book [Ref. 16:p. 44]

Where a department leans heavily on outside services, there arises the undesirable situation in which the head of the department is accountable for achieving certain results without having authority or control over many of the resources needed to achieve those results. This raises the whole question of 'centralized' versus 'decentralized' services.

B. LACK OF ADEQUATE CONTROL AND COORDINATION

There was observed a deficiency in controlling the proper functioning and adequately managing internal and external coordination in the following sub-units.

1. Transport Squadron

The Squadron Commanding Officer lacked positive control over his Alpha Support Group located 65 miles away, due mainly to difficulties with telecommunications and the high demand for unexpected flights that require quick decision making by the Group Head. This situation created a necessity of a direct relationship between the Alpha Support Group Head and the Commander of Naval Aviation. Of course, the fact that the Squadron Commanding Officer had to be bypassed in the chain of command for operational reasons does not relieve the uncertainty and inconvenience in the performance of his duties, at the same time causing some friction in the relationship between the Squadron Commanding Officer and the Group Head.

2. Maintenance Department

Throughout the interviews with the Officers in charge of different sub-units, including the Maintenance Department and Logistics Division Officers, the reasons given for maintenance problems were related to deficiencies in the accomplishment of internal functions such as maintenance control, quality assurance control, and material control, all due mainly to inadequate dissemination of maintenance information, and the removal of the material control office. One of the problems that this brought as a consequence was the inefficient handling of spare parts requisitions and the flow of spare parts back and forth to the Supply Department. For example, as stated by the Supply Officer, requisitions were sent to the Supply Department on a continuous basis by different

sections of the Maintenance Department, without any centralized control, complicating the task of the Supply Department in locating and delivering spare parts. (See Flowchart No 1)

Looking at Figure 17, it can be observed that the Scheduling Section, which is assigned the maintenance control function over the Production and Weapons & Electronics Section, is at the same level as the sections it controls. This inhibits the efficiency of the scheduling section due to lack of any formal power over the sections it is supposed to control. As stated by Mintzberg in [Ref. 17:p. 314] "Control appears as the primary element by which the organization achieves efficient operational performance"; hence, the impact caused by this problem over the whole organization.

3. Supply Department

The problems encountered in this department stemmed from lack of good coordination with the Maintenance Department to systematize and ease the process of flow of requisitions and spare parts. This was primarily caused by internal processes in the Maintenance Department. On the other hand, interviewees reported a deficiency in the Supply Department in handling the large amount of data related to spare parts because of limitations of the nonautomated information system in use. As Galbraith stated in [Ref. 18:p. 15], there are two ways to handle more information, investing in vertical information systems and/or creation of lateral relations.

C. INEFFICIENT CHAIN OF COMMAND

Bureaucratic extra steps displayed in the chain of command from the Naval Air Squadrons to the Commander through the Operations Division, and from the

Maintenance Department to the Commander through the Logistics Division was viewed as an unnecessary increase in "red-tape".

The fact that the three Squadrons are the operational units of the whole organization creates the necessity of frequent interaction between the Commander of Naval Aviation and the Squadron Commanding Officers. This was confirmed by the many times that the Squadron Commanding Officers were called upon directly by the Commander of Naval Aviation or the Chief of Staff regarding operational matters. Also, the staff functions that the Operations Division has to perform are considered relevant in the performance of the whole organization which suggests the separation of this unit from the line functions.

On the other hand, the Maintenance Department accomplishes a vital function of insuring the availability of aircraft to fly. Most of the day-to-day problems of the organization were related to maintenance problems. Hence, the importance of giving the maintenance unit an adequate standing in the organization in order to facilitate the decision making process, thereby avoiding unnecessary bureaucratic steps that diminishes its efficiency (See Flowchart No 1). In accordance with the Fundamentals of Command and Organization Manual [Ref. 15:p. 3-2], the number of steps in the chain of command should be kept at a minimum. The extra steps reduce the efficiency of the command.

D. DUPLICATION OF EFFORT

During the field research it was observed that a strong relationship existed between the Planning and Control Section and the Operations Division due to the fact that its basic function was closely related to the Operations Division function (Chapter V pp. 34,36).

Although, the only formal relationship was with the Chief of Staff, this Section Head usually sent a hard copy of his reports to the Operations Division Head.

During an interview with the Officer in Charge of this section it was found that most of his daily tasks were related to the control of the implementation of operational plans and standardization of flight procedures. The Operations Division Officer stated that these tasks belonged in his area of responsibility, and that this was a duplication of the functions of the Flight Control Department (Chapter V p. 36).

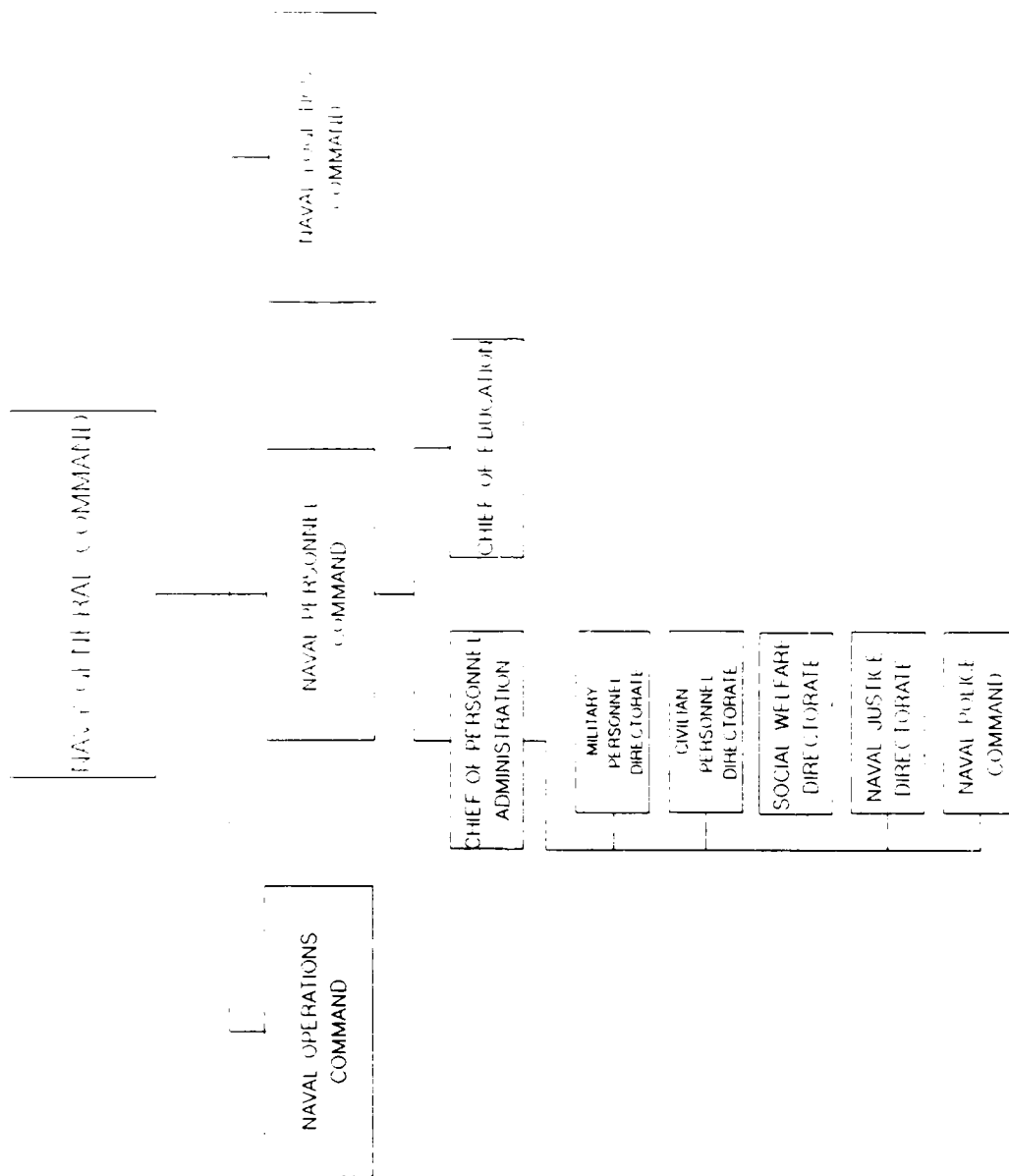
This unclear definition of the functions to be accomplished by the Planning and Control Section and the Flight Control Department creates a duplication of efforts and an environment suitable for "turf battles".

E. INEFFICIENT PLACEMENT

From the analysis of the organization it was found that the Base Defense Department, composed of a Naval Police Detachment, has a close relationship with the Personnel Section. This Section promulgates the daily duty roster and schedules personal weapons training which is then executed by the Base Defense Department. For this reason it seems that a more efficient way to perform the duties for both sub-units would be through direct formal relationship. At the macro level of the Naval Organization, this same type of task is carried out by the Naval Police Command which reports directly to the Chief of Personnel Administration [Ref. 14]. (See Figure 18)

F. JOB DESIGN PROBLEM

Another problem reported during the interviews was that the electronic specialty was united under a single section. This low level sub-system removes the



Navy General Command Organizational Chart

Figure 18

opportunity for upward mobility by limiting the avenues of advancement to higher nonexistent levels and thereby impedes the development of skills and capabilities necessary to maintain and repair the ever increasing sophisticated different electronic equipment.

For example, as currently organized, the organization has limited the technical level required to fill the posts due to the low level classification of the Weapons and Electronics Section. This in turn restricts the design of necessary jobs to fulfill the basic function of this Section. As a consequence most of the electronic repairs have to be sent to outside electronics shops increasing the dependence on foreign technical services.

VII. ALTERNATIVE STRUCTURES

When designing an organization, the designer must understand the characteristics of the environment surrounding it, and the demands this environment makes on the organization in terms of information and coordination [Ref. 2:p. 62]. Based on these findings, the organizer must solve the dilemma either by reducing the amount of information required for decision making through a decentralization strategy or by increasing the capacity to manage more information through development of more lateral relations. Both strategies reduce the amount of exceptional cases referred upward into the organization through hierarchical channels avoiding overload of information in the decision posts and making the organization more effective and efficient [Ref. 18:p. 15]. Appendix B details the coordinating mechanisms proposed by Jay Galbraith in his information processing model to manage the information in accordance with the requirements made by the complexity and uncertainty of the environment of the organization.

The analysis of the Naval Aviation Organization, made in Chapter V, showed an entity surrounded by a complex and dynamic environment. This environment creates an amount of uncertainty that requires more coordination and better handling of the information that is currently flowing within the organization. A mixed approach, with some degree of decentralization to reduce the need for information for the decision making process, the creation of lateral relations to provide information thereby facilitating coordination, and the investment in vertical information systems to allow the processing of more information without

overloading the hierarchical communications channels, was made in order to design possible alternative structures for the Naval Aviation Organization.[Ref. 2:p. 75]

Three organization proposals for Venezuelan Naval Aviation that could be helpful in solving the current organizational problems will be discussed below. The First proposal was one presented by The Naval Aviation Problematic Analysis Committee on September 9th 1987 which is currently under study by higher command [Ref. 19]. The other two were proposed by the author taking into account the analysis made in Chapter V and Chapter VI of this thesis.

A general overview of each organizational structure will be made followed by a discussion of changes proposed per previous defined areas. Finally a pros and cons assessment will be accomplished.

A. ORGANIZATION STRUCTURE # 1

1. Organizational Overview

The organizational structure proposed by the Naval Aviation Problematic Analysis Committee was the following:

- . Command¹¹
 - Deputy Commander
 - Aide and Secretariat Office
 - Naval Safety Office
 - Staff Task Force
- . Staff Units¹²
 - Operations Division
 - Personnel Division
 - Maintenance Division
 - Logistics Division
- . Line Units¹³
 - Tactical Support Squadron
 - ASW and Maritime Patrol Squadron

¹¹ Command: Composed of the Commander and his direct advisory sub-units.

¹² Staff Units: Primary support and advisor to the Line Units.

¹³ Line Units: Accomplish the primary or principal activities of the organization.

- Helicopter Squadron
- Executive Transport Squadron
- Air Training Squadron (To be developed)

Figure 19 depicts the Macro Structure of this organization proposal.

2. Changes Proposed

The organizational changes proposed in the different areas defined in Chapter V were the following:

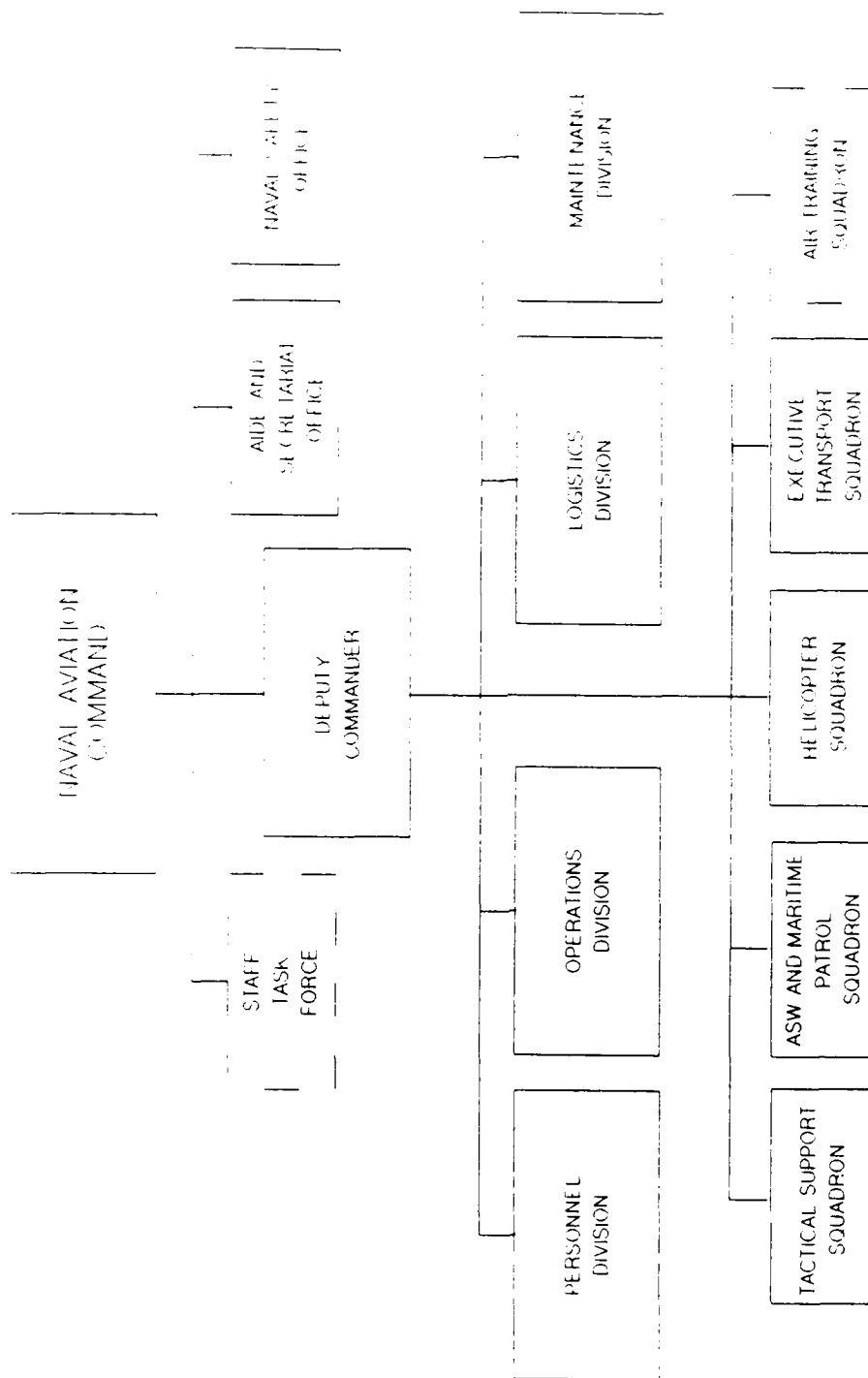
a. Command and Staff Area

The changes proposed in this area are:

(1) Relocation of Finance Office. To remove this office from the direct formal dependence on the Commander of Naval Aviation, and place it under the authority of the Logistics Division Officer for administrative control. However, the Finance Officer will maintain a close relationship with the Commander of Naval Aviation regarding functional matters.

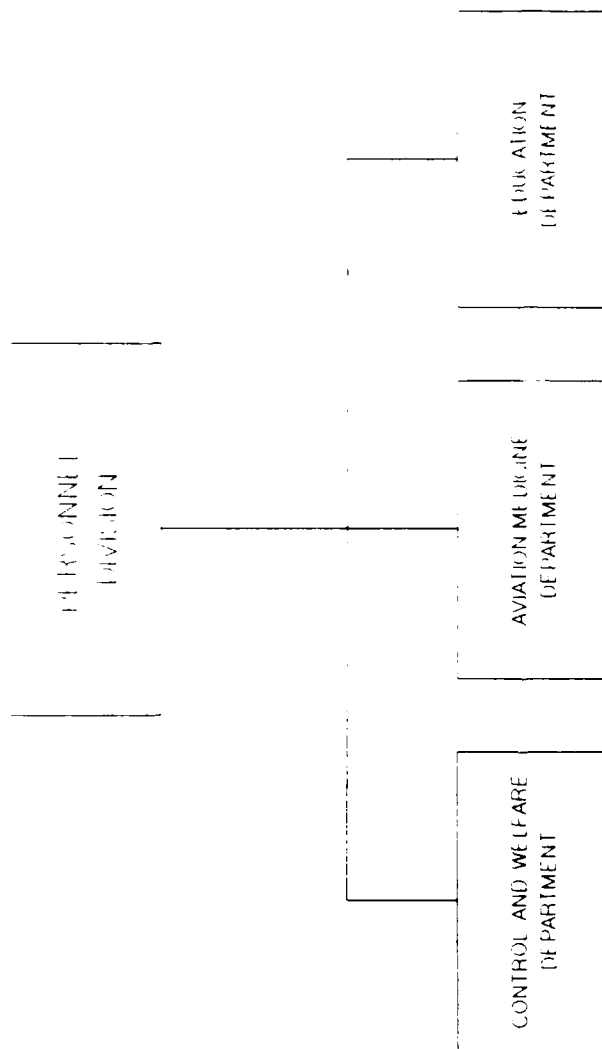
(2) Reclassification of The Chief of Staff. Due to the deputy functions accomplish by this officer during day-to-day operations, this post was renamed as Deputy Commander. This new classification gives the Chief of Staff formal authority over the line Naval Aviation Sub-units. The staff function for matters, such as specific operational planning, organizational problems, etc., are supposed to be accomplished by an ad hoc task force designated by the Commander of Naval Aviation. (See Figure 19)

(3) Reclassification of the Personnel Section. Reclassified as Personnel Division and organized as depicted in Figure 20. The personnel function is spread into three departments: The Education Department with the specific function of planning and controlling Naval Aviation training programs; the Aviation Medicine Department, with the specific function of health care for aviation



Structure No. 1 Macro Organizational Chart

Figure 19



Structure No. 1 Personnel Division Organizational Chart
Figure 20

personnel; and the Control and Welfare Department, covering the remaining designated personnel functions.

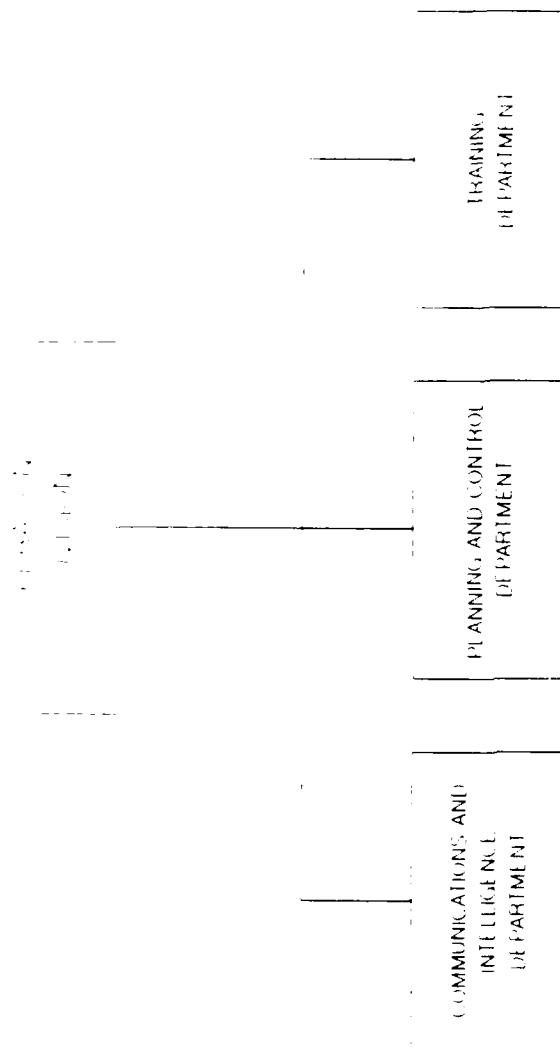
(4) Integration of the Planning and Control, and Communication and Intelligence Sections. These two sections were integrated under the Operations Division, Figure 21 shows the new proposed organization of the Operations Division, where the fusion of the former Flight Control Department and Planning and Control Section as a new Planning and Control Department can be observed. Also, the removal of the Naval Air Squadrons from the authority of the Operations Division Officer is apparent.

This new organizational arrangement of the Operations Division as a staff unit rather than a line unit solves the problems explained in Chapter VI, of: duplication of efforts between the Planning and Control Section, and the Flight Control Department, by their fusion into one sub-unit; and the inefficient chain of command problem by removing the bureaucratic step for the Naval Air Squadrons.

b. Operational Area

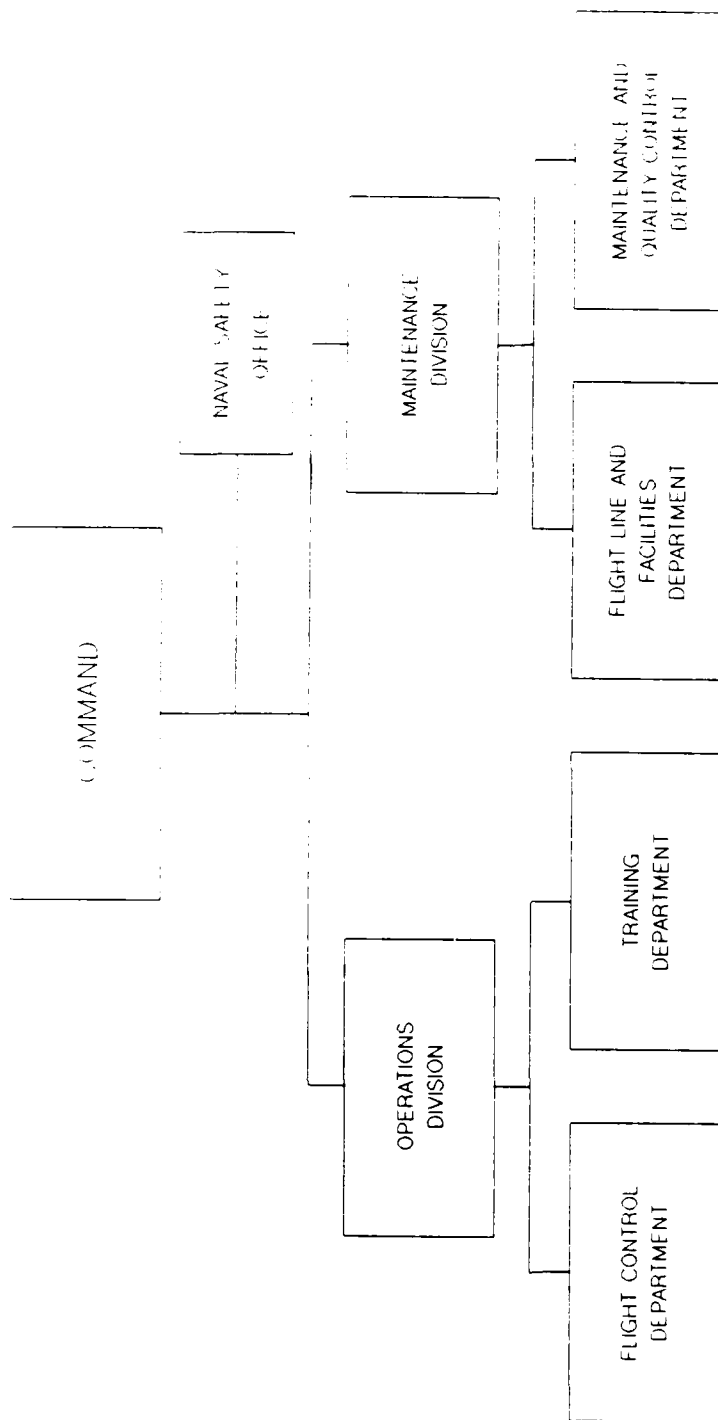
This area configured now by the Naval Air Squadrons (See Figure 19) exhibits: a formal direct access of the Squadron Commanding Officers to the Naval Aviation Command; the split of the Transport Squadron in two, one named Tactical Support Squadron and one named Executive Transport Squadron (Former Alpha Support Group) which the executive transportation function; and the possibility of future development of an Air Training Squadron.

The squadrons are configured with a larger and unified organization, as depicted in Figure 22, where it can be observed the following sub-units:



Structure No 1 Operations Division Organizational Chart

Figure 21



Structure No 1 Squadrons' Organizational Chart
Figure 22

(1) Naval Safety Office. To accomplish the safety function at a squadron level, reporting directly to the Squadron Commanding Officer.

(2) Operations Division. To plan and control the execution of the corresponding flight missions, as ordered by the Naval Aviation Command, and assure the flight proficiency of its aircrew. Each Squadron Operations Division Officer reports to the Squadron Commanding Officer. He has under his command the Flight Control Department for flight planning and control purposes, and the Training Department for ensuring aircrew proficiency and standardization of flight procedures within the squadron.

(3) Maintenance Division. To accomplish organizational level maintenance within each squadron. This Division is configured into two departments: The Maintenance and Quality Control Department for planning and control of the assigned aircraft maintenance as well as ensuring the quality of maintenance, and the Flight Line and Facilities Department for execution of organizational level maintenance on the squadron's aircraft.

This new arrangement in the operational area solves the problems stated in Chapter VI of: Inefficient Chain of Command problem by relocating the Operations Division, the maintenance centralization problem by allowing each squadron to control organizational level maintenance of its assigned airplanes, and the lack of adequate control and coordination problem of the Transport Squadron by removing the Alpha Support Group and making it another squadron.

c. Logistics Area

The changes observed in this area are the following:

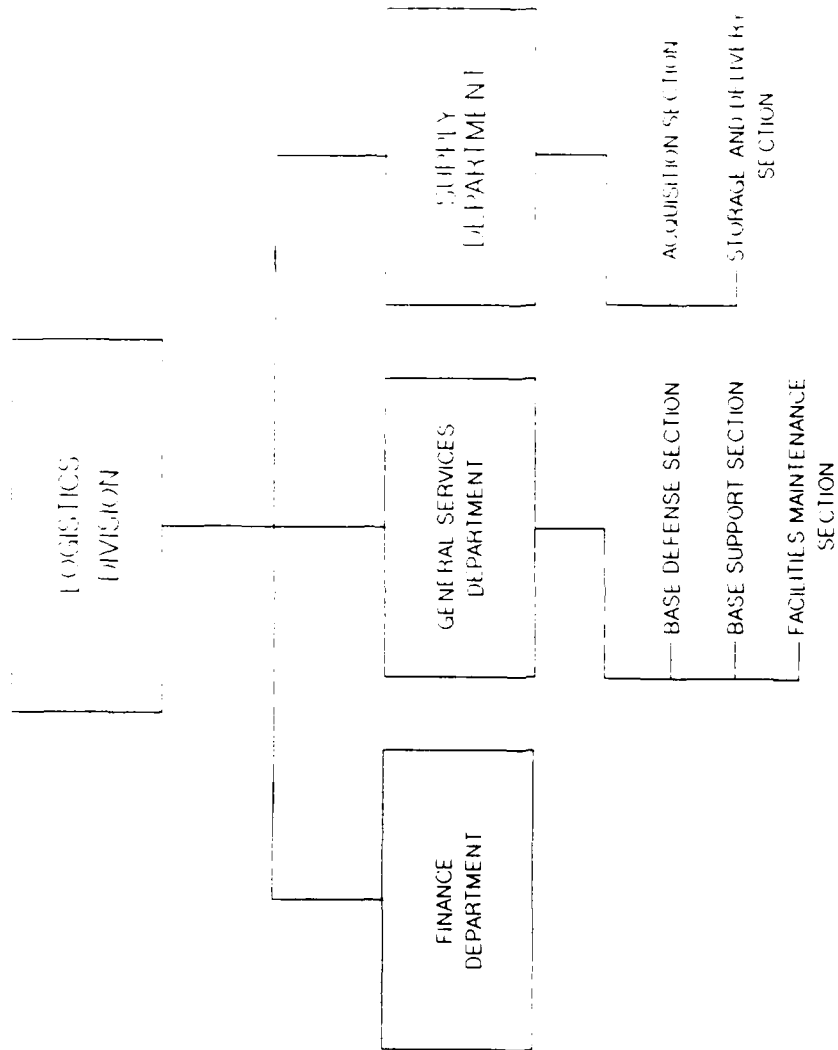
(1) Reclassification of the General Services Division. It is reclassified as a department under the authority of the Logistics Division Officer, retaining three sections corresponding to the former Base Defense Department, Base Support Department, and Facilities Maintenance Department. The relocation of this logistical service avoids an increase in the number of sub-units under the Deputy Commander's span of control by switching positions with the Maintenance Department. Also, these type of services are considered compatible with the Logistics Division function. (See Figure 23)

(2) Reclassification of the Maintenance Department. It is reclassified as the Maintenance Division with direct access to the Naval Aviation Command. Its functions are limited to providing intermediate and depot level maintenance only. This Division is configured as depicted in Figure 24 where the following changes can be observed:

. The Production Section. Reclassified as the Aircraft Department, is composed of five sections corresponding to the current shops. The Flight Line Shop was removed, as well as organizational level maintenance of the different aircraft (See Figure 24). This new classification allows technicians with higher knowledge levels to be utilized.

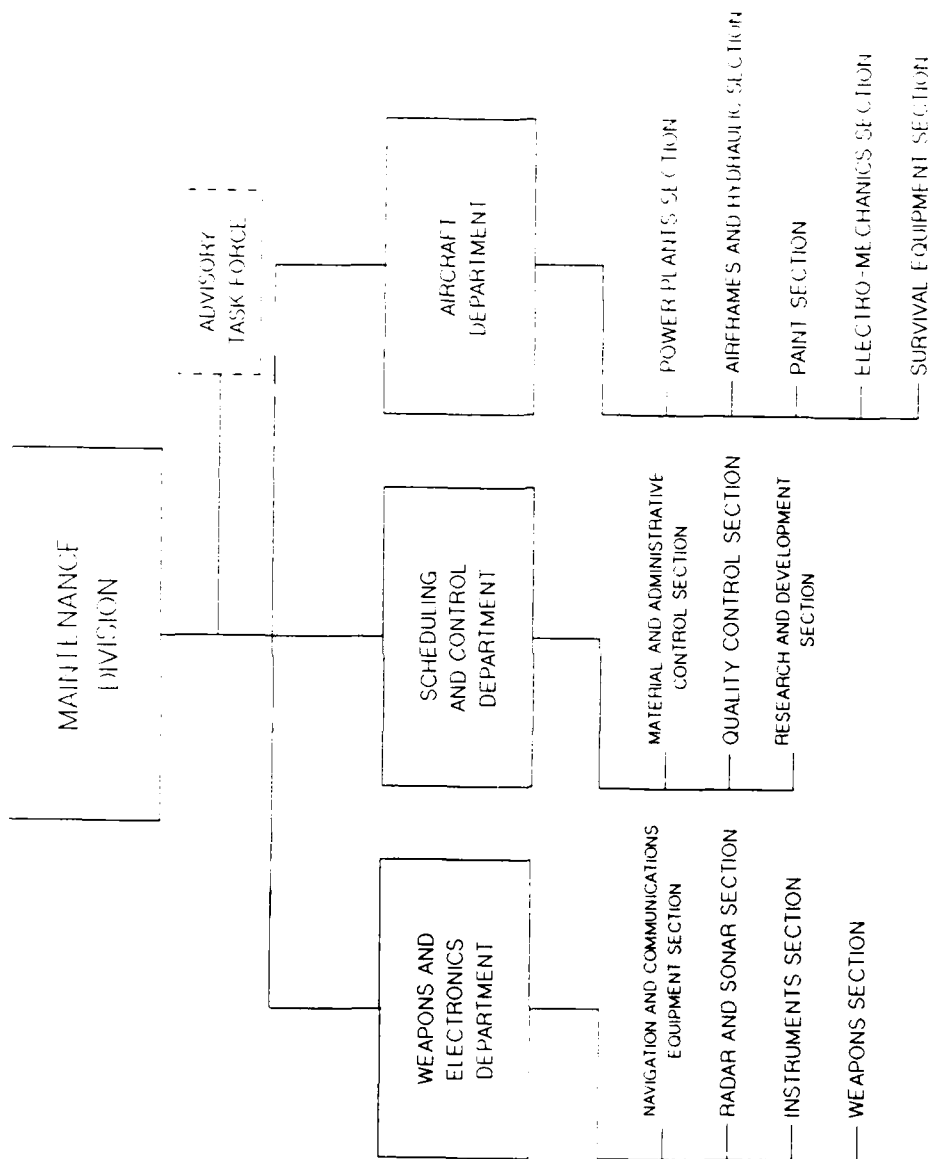
. The Weapons and Electronics Section. Reclassified as the Weapons and Electronics Department and reorganized internally as follows (See Figure 24).

- Navigation and Communication Equipment Section. Former Avionics Shop.
- Radar and Sonar Section. Derived from the split of the former Weapons and Sensor Shop.
- Instruments Section. Former Electronics Shop.
- Weapons Section. Derived from the split of the former Weapons and Sensor Shop.



Structure No. 11 Logistics Division Organizational Chart

Figure 2-3



Structure No. 1 Maintenance Division Organizational Chart
Figure 24

This new classification and reorganization enhances the capabilities of electronic maintenance, by permitting the utilization of higher skilled technicians.

. The Quality Control and Scheduling Sections. Integrated into the Scheduling and Control Department which plans and controls the scheduled and un-scheduled intermediate and depot level maintenance of naval aircraft. This department is comprised of three sections:

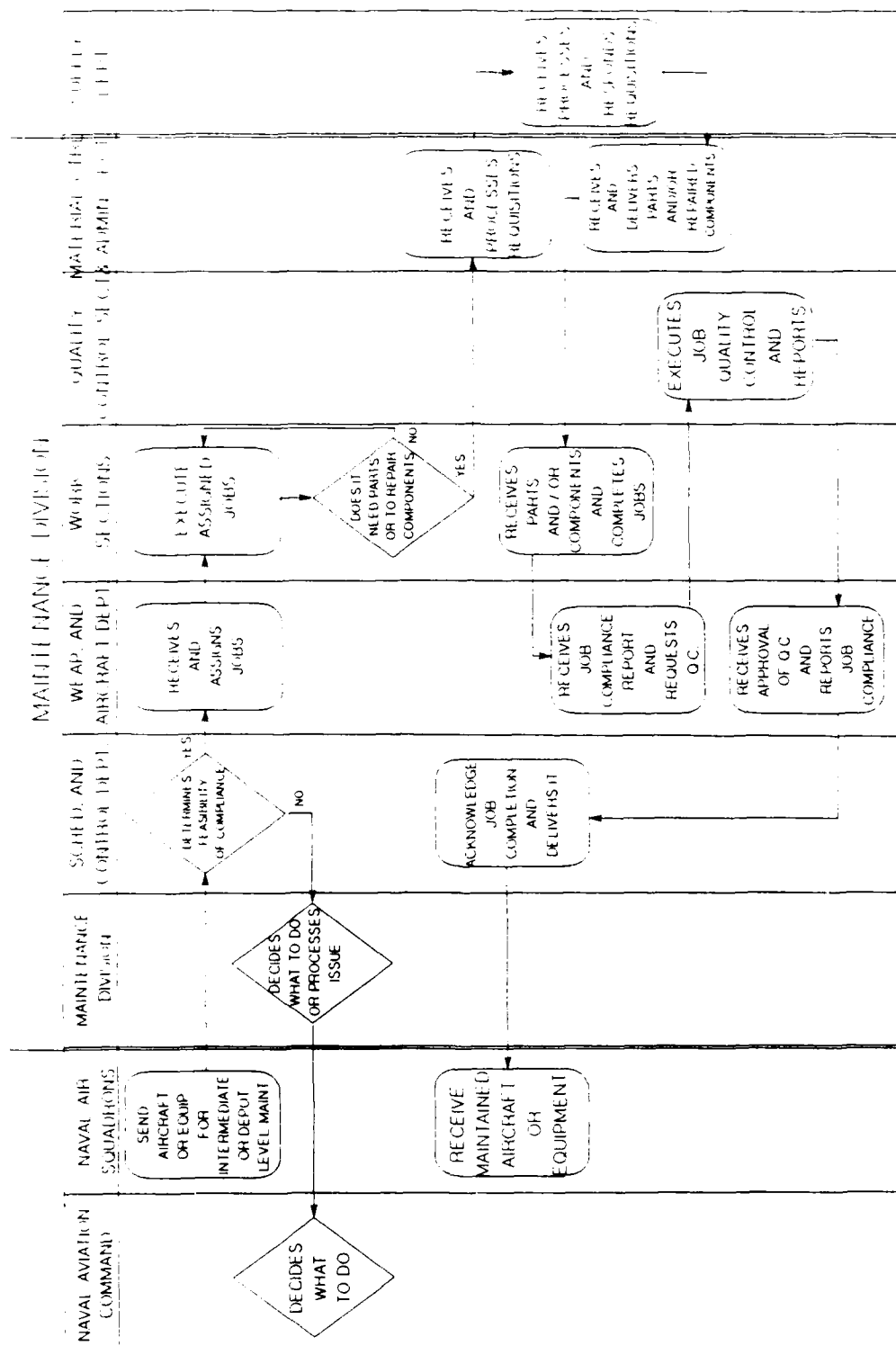
- Material Control and Administrative Section. To handle and control the flow of spare parts between the Maintenance Division and Supply Department (lateral relations).
- Quality Control Section. Maintains its same function, but at intermediate and depot level.
- Research and Development Section. Maintains close relationship with Research Institutes and Industries to solve technical problems and/or develop new maintenance processes or technologies.

This department is supposed to have a lateral relations with the Maintenance Divisions from the different squadrons in the performance of its duties.

. Technical Advisory Task Force. To be designated by the Maintenance Division Officer to solve technical maintenance problems.

Flowchart No 2 depicts the work flow proposed for this organizational arrangement.

This proposed reorganization of the Maintenance Function solves the problem stated in Chapter VI of lack of adequate control and coordination within the Maintenance Department, and between the Maintenance and Supply Departments by the creation of the Material Control and Administration Section. Also, to some degree, it solves the problem called job design by allowing an increase in the hierarchical level of the electronics maintenance function.



Structure No 1 Maintenance Division Work Flow

Flowchart No 2

3. Pros and Cons

The organizational structure proposed as alternative number one has the following pros and cons:

a. Pros

- . Solves the duplication of effort problem.
- . Removes the extra steps detected in the chain of command.
- . Allows more discretion for the Squadron Commanding Officers in the fulfillment of their mission.
- . Removes the lack of adequate control and coordination problem of the Transport Squadron.
- . Solves the coordination problem between the Supply Department and Maintenance Division.
- . Allows some expansion of the electronics maintenance function.
- . Reduces the amount of standing personnel, by implementing a staff task force when required.
- . Maintains an adequate span of control.

b. Cons

- . Splits into two the Transport Squadron, requiring duplication of resources, especially an extra maintenance group at the organizational level.
- . Does not give formal power to the Maintenance Control and Scheduling Department over the departments that it is supposed to control at the squadron and macro-organizational level, which creates the possibility of future conflict and inefficiency.
- . Does not relocate the Base Defense Department, therefore avoiding a smoother work flow for this unit.

B. ORGANIZATION STRUCTURE # 2

1. Organizational Overview

The second proposed organization has the following macro-structure:

- . Command
 - Deputy Commander
 - Aide and Secretariat Office
 - Finance Office
 - Naval Safety Office
 - Staff Task Force

- . Staff Units
 - Operations Division
 - Personnel Division
 - Maintenance Division
 - Logistics Division
- . Line Units
 - ASW and Maritime Patrol Squadron
 - Helicopter Squadron
 - Transport Squadron
 - Air Training Squadron (To be developed)

Figure 25 depicts the Macro-structure of this organization.

2. Changes Proposed

The changes proposed by this organizational arrangement in comparison with the current Naval Aviation Organization are the following:

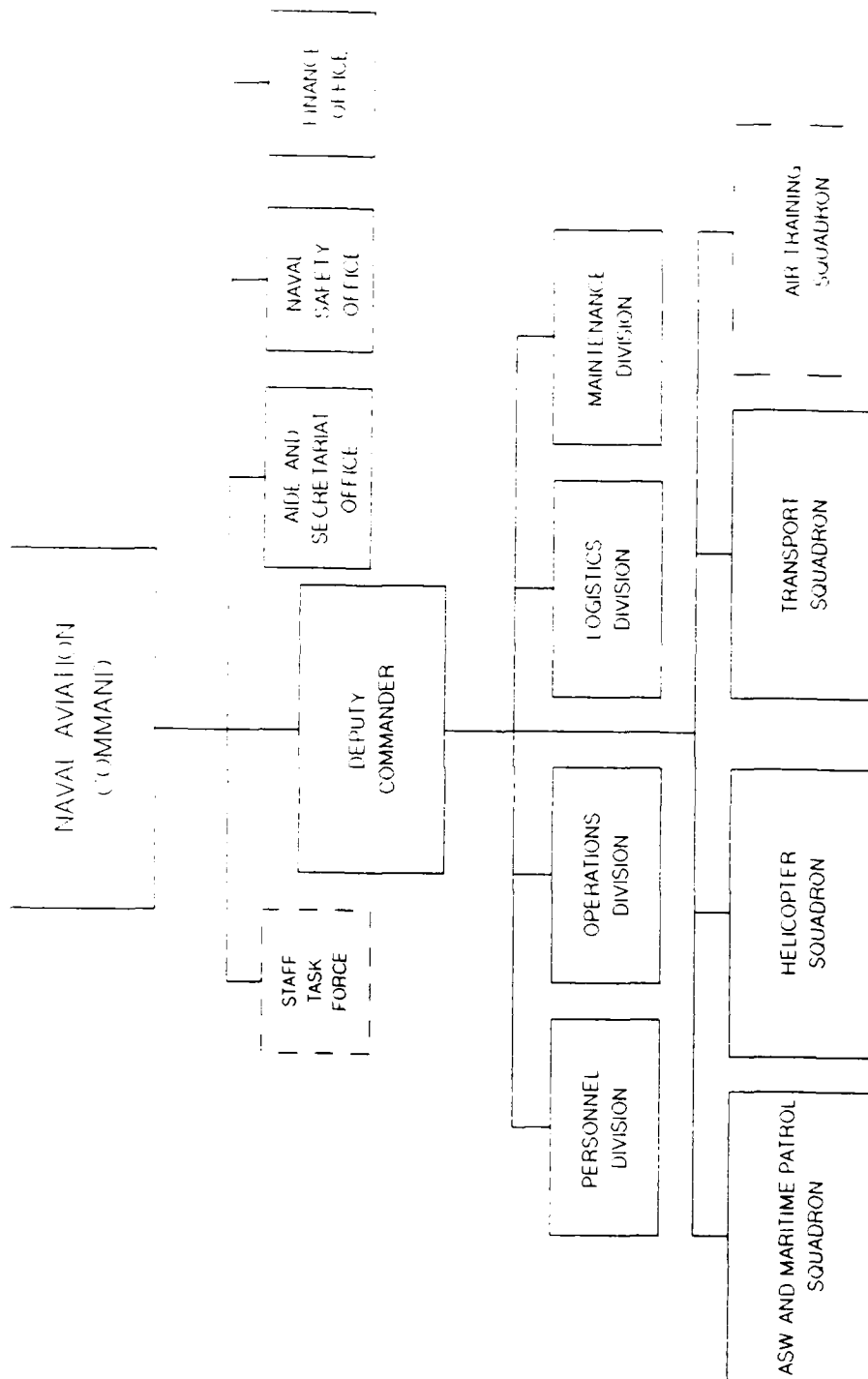
a. Command and Staff Area

(1) Reclassification of the Chief of Staff. Same as Structure # 1, this arrangement proposes to reclassify this post as Deputy Commander. This classification gives formal authority to the holder of this post over the Staff and Line Units. This designation is justified by the real day-to-day duties of this post. The operational staff function is supposed to be accomplished by a task force designated by the Commander of Naval Aviation when required (See Figure 25).

(2) Reclassification of the personnel Section. Reclassify the Personnel Section as a Personnel Division in charge of the following departments:

. Aviation Medicine Department. Responsible for the health care of aviation personnel.

. Educational Department. Plan and control the execution of the different training programs in accordance with the strategy of the organization.



Structure No 2 Macro Organizational Chart
Figure 2b

. Control and Welfare Department. Accomplish the remaining goals established by the command within the personnel area.

. Base Defense Department. Remove from the General Services Division and put under this Division to avoid any possible inter-sub unit conflict due to the close relationship of the Base Defense Department with the Personnel Officer.

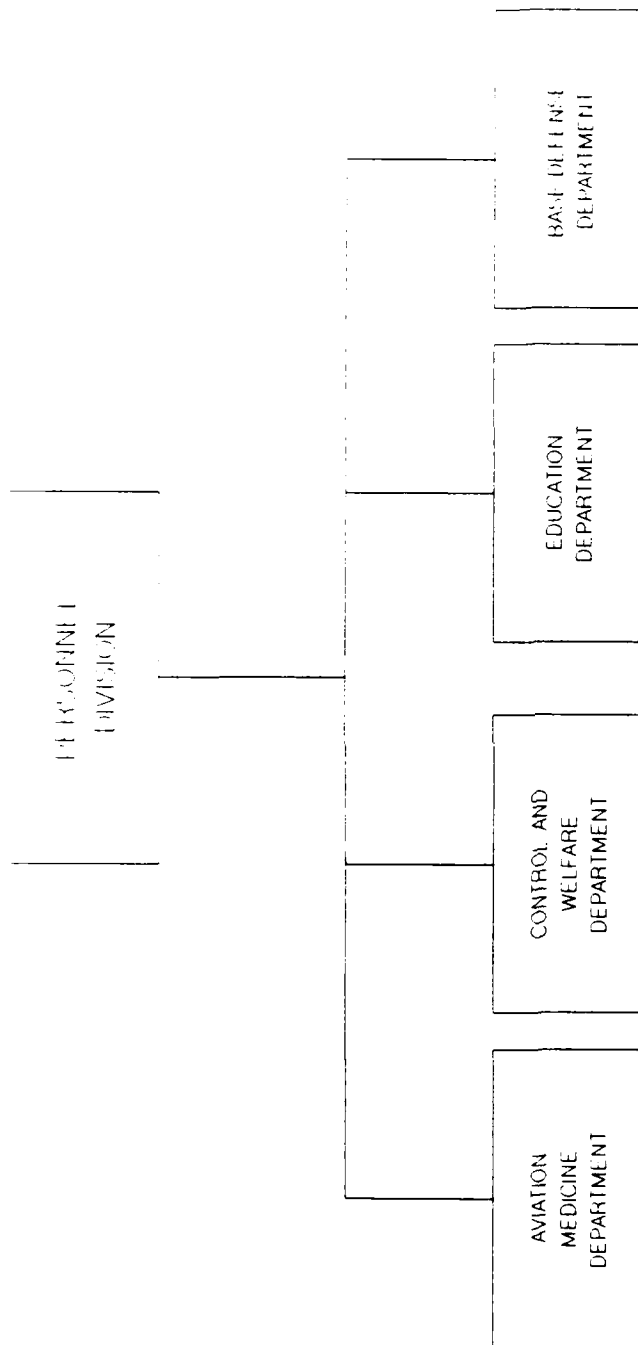
Figure 26 exhibits the Organizational Chart of the Personnel Division.

This rearrangement expands the capacity to accomplish important personnel specific functions within the Naval Aviation Organization (Health Care, Education), as well as relocating the Base Defense Department, solving the problem categorized as inefficient placement in Chapter VI.

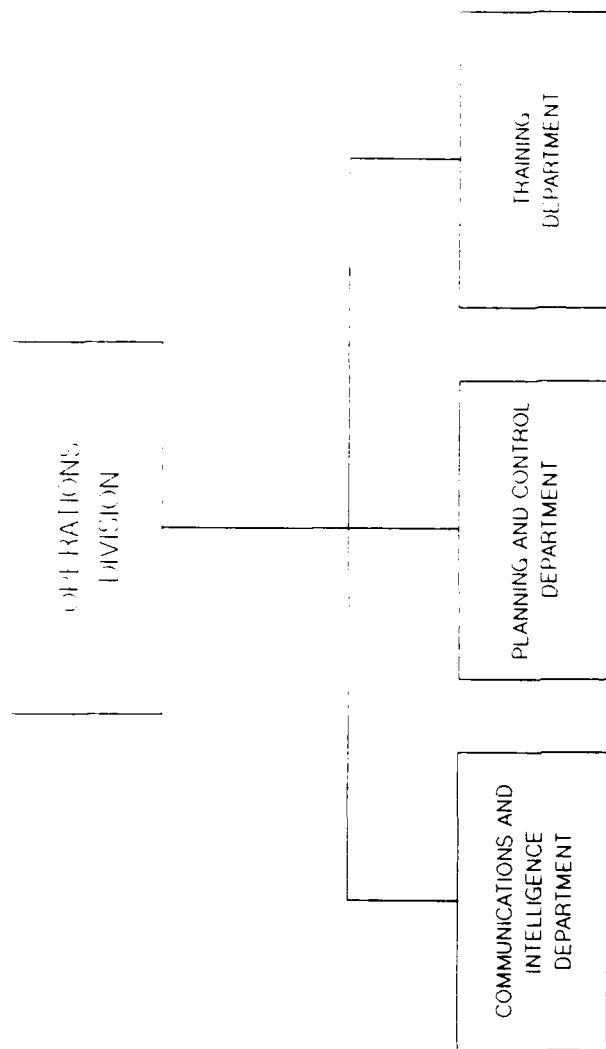
(3) Integration of the Planning and Control, and Communication and Intelligence Sections. Integrate these two sections under the Operations Division, due to the type of operational functions that they accomplish within the organization. Also, the Planning and Control Section and the Flight Control Department appear in this arrangement as only one department named Planning and Control Department (See Figure 27). This arrangement solves the duplication of efforts problem stated in Chapter VI between Planning and Control Section and Flight Control Department.

b. Operational Area

(1) Reorganization of the Operations Division. As shown in Figure 25, this sub-unit is removed as a line unit and placed as a staff unit. Figure 27 exhibits the new proposed arrangement, where the Squadron units are removed. This new disposition removes the bureaucratic step in the chain of command of the Squadron Units, as stated in Chapter VI.



Structure No. 2 Personnel Division Organizational Chart
Figure 26



Structure No 2 Operations Division Organizational Chart
Figure 27

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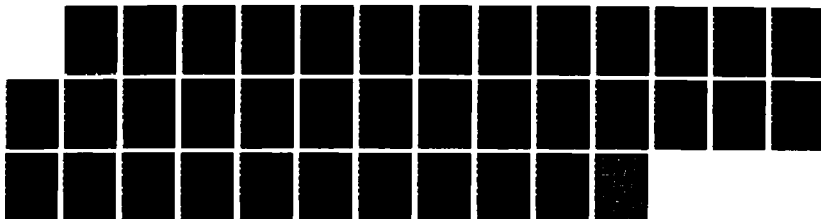
AN ANALYSIS OF THE STRUCTURAL ORGANIZATION OF THE
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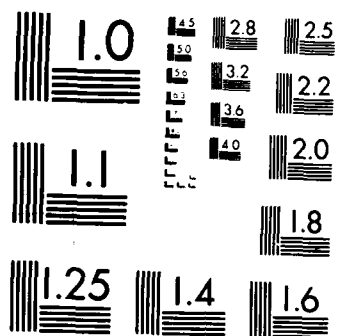
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(2) Reorganization of the Squadron Units.

With the relocation of the Operations Division (See Figure 25), the Squadrons have direct access to the Naval Aviation Command. Also, they are maintained at three units and a prospective Training Squadron. In order to solve the problems of the operational units analyzed in Chapter VI the following is proposed.

Integrate the tactical support and executive transportation function of the Transport Squadron by locating the Alpha and Bravo Support Groups in the same geographical area, making the Charlie Support Group a detachment assigned from the Squadron's Maintenance Division personnel. No major impediment was found during the research.

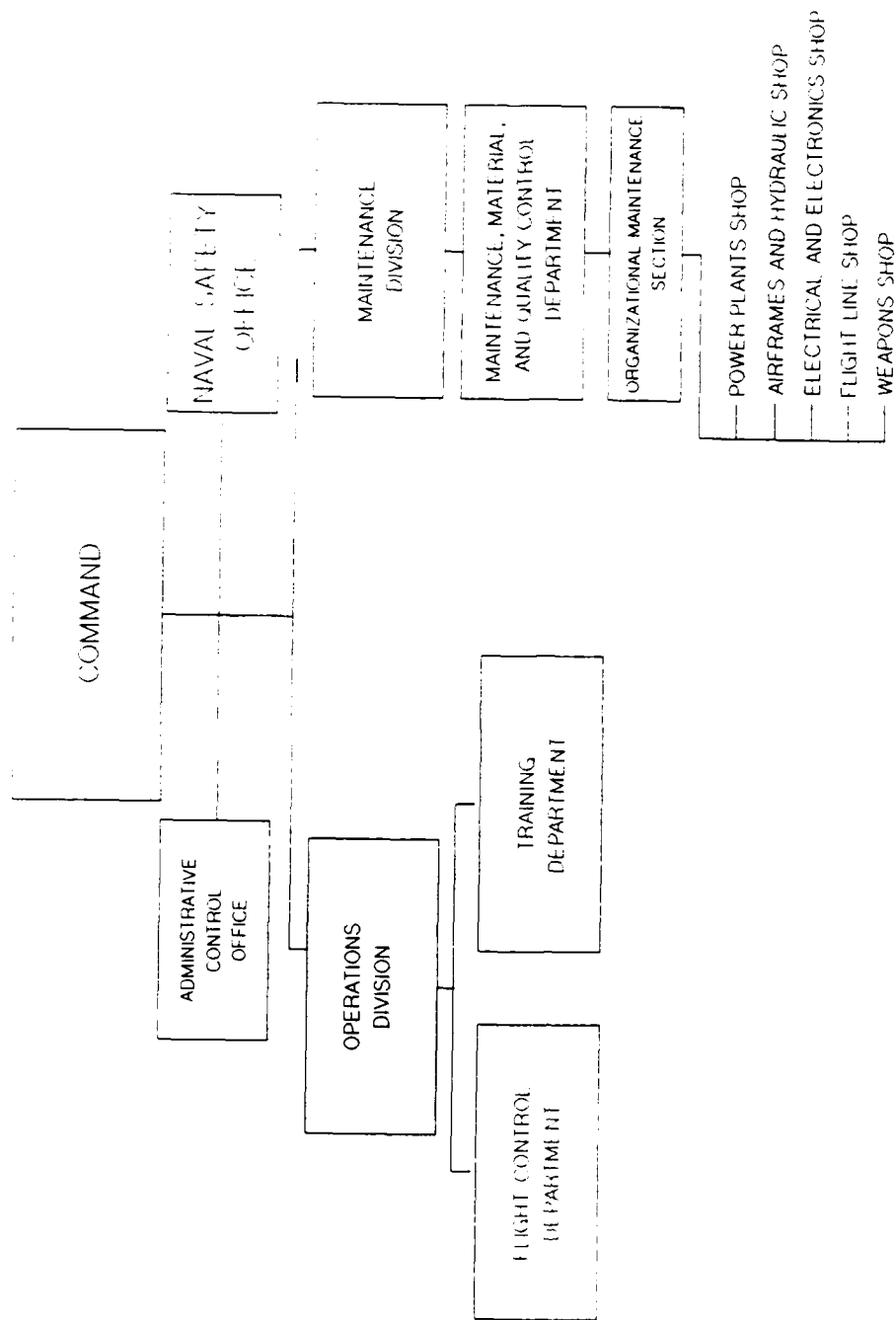
Configure the Squadrons as depicted in Figure 28 with the following sub-units:

- . Naval Safety Office. Accomplish the safety function at the squadron level reporting directly to the Commanding Officer.

- . Administrative Control Office. Support the Commanding Officer in managing the personnel, financial (when required), and general administrative problems of the Squadron.

- . Operations Division. Plan and control the maintaining of flight proficiency of the squadron's aircrew. The Division Head reports to the Commanding Officer. Under his command he has the Flight Control Department for flight planning and control purposes, and the Training Department for maintaining aircrew proficiency and standardization of flight procedures.

- . Maintenance Division. Accomplish the organizational level maintenance within each squadron. This Division has Maintenance, Material, and Quality Control as one Department to accomplish the related functions of maintenance scheduling and control,



Structure No 2 Squadrons' Organizational Chart
Figure 28

material support and quality assurance. Under this Control Department, falls the Organizational Maintenance Section. This Section executes the organizational maintenance through the Power Plants, Airframes and Hydraulics, Electrical and Electronics, Flight Line, and Weapons Shops. The Weapons Shop is required only in those squadrons whose assigned mission includes handling / delivery of ordnance.

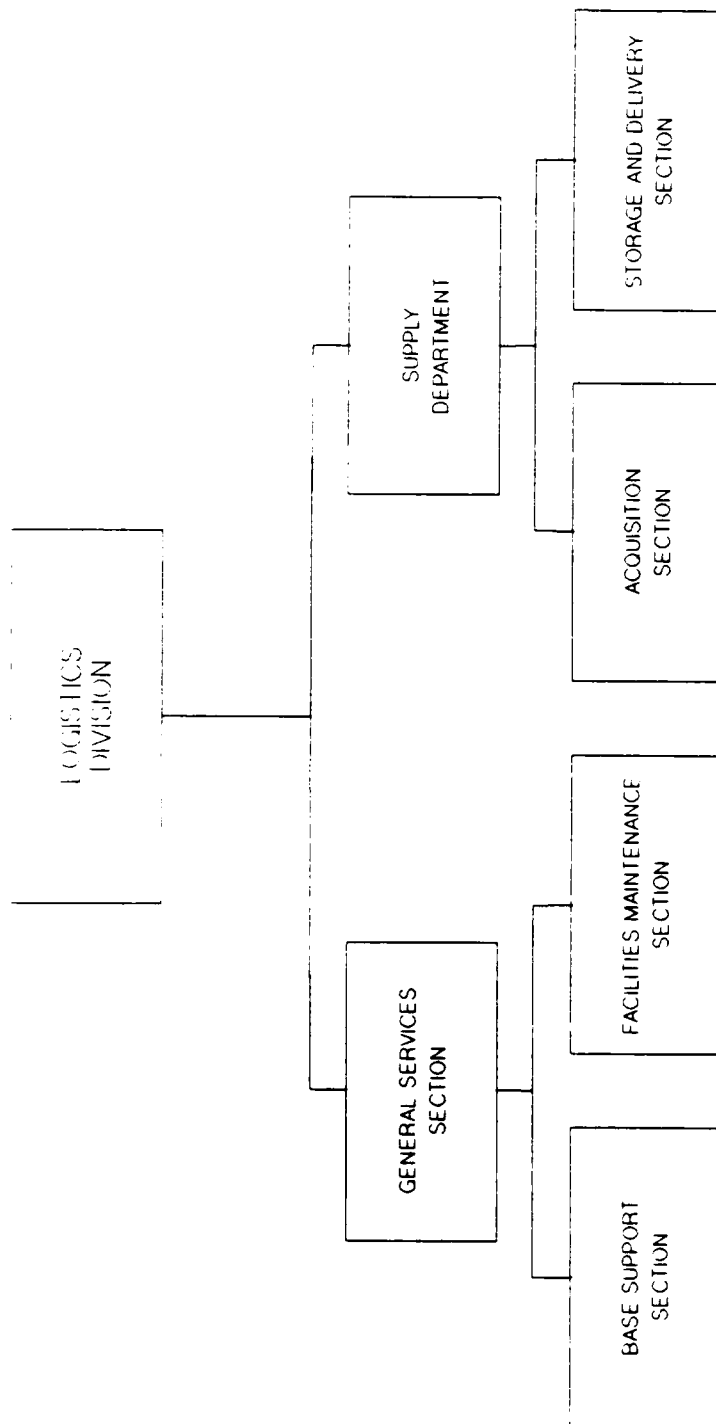
This proposal solves the problems stated in Chapter VI as: maintenance centralization problem, because it allows each squadron to control the organizational level maintenance of its assigned aircraft. The lack of adequate control and coordination problem facing the Transport Squadron, by reunifying the Alpha and Bravo Support Groups in the same geographical area.

c. Logistics Area

The changes proposed in this area are the following:

(1) Reclassification of the General Services Division. It is reclassified as a department and put under the Logistics Division. Also, its Base Defense Department is removed and put under the Personnel Division. Figure 29 exhibits the Logistics Division Organizational Chart where it can be observed that the General Services Department with the Base Support and Facilities Maintenance Sections perform the same basic functions. The Supply Department showed in the same figure has no changes. This rearrangement is based on the compatibility of the services implied within the Logistics Division function.

(2) Reclassification of the Maintenance Department. It is reclassified as the Maintenance Division with direct access to the Naval Aviation Command. This structure is supposed to support the



Structure No 2 Logistics Division Organizational Chart
Figure 29

naval aviation aircraft at the intermediate and depot level maintenance.

This Maintenance Division is configured as shown in Figure 30 with the following sub-units:

. Quality Control Office. As a staff sub-unit with a direct relationship with the Maintenance Division Officer. In this position, it is thought that quality control personnel may more easily comply with their function as inspectors.

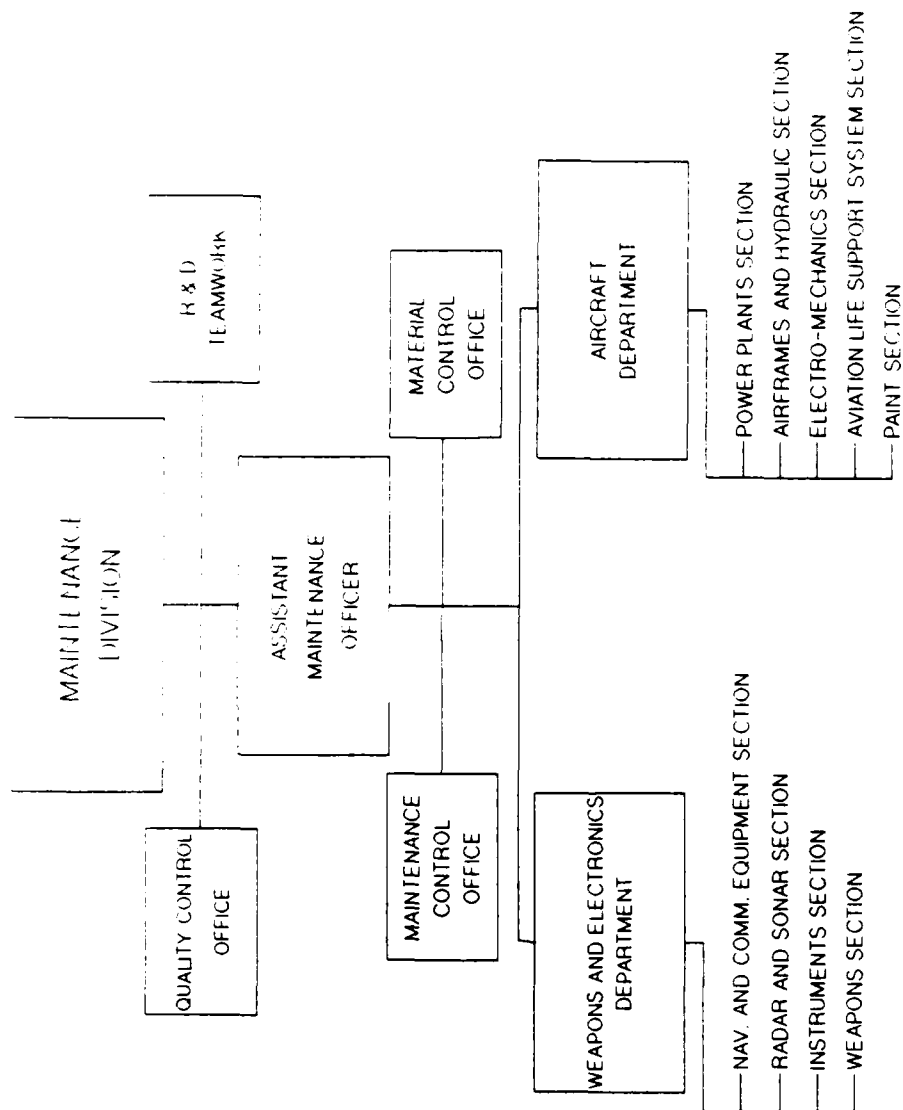
. Research and Development Team. This sub-unit accomplish research and development related to aircraft maintenance issues, keeping a direct relationship with the Maintenance Division Officer easing the application and dissemination of its findings.

. Assistant Maintenance Officer. Proposed as an executive officer for the Maintenance Division, in charge of the scheduling and control of maintenance, as well as control of the flow of required spare parts and outside repair of aircraft components. To accomplish his control function he has a staff of Maintenance Control and Material Control Offices. Flowchart No 3 shows the work flow of the Maintenance Division in more details.

. Weapons and Electronics Department. Under direct command of the Assistant Maintenance Officer and internally organized as follows:

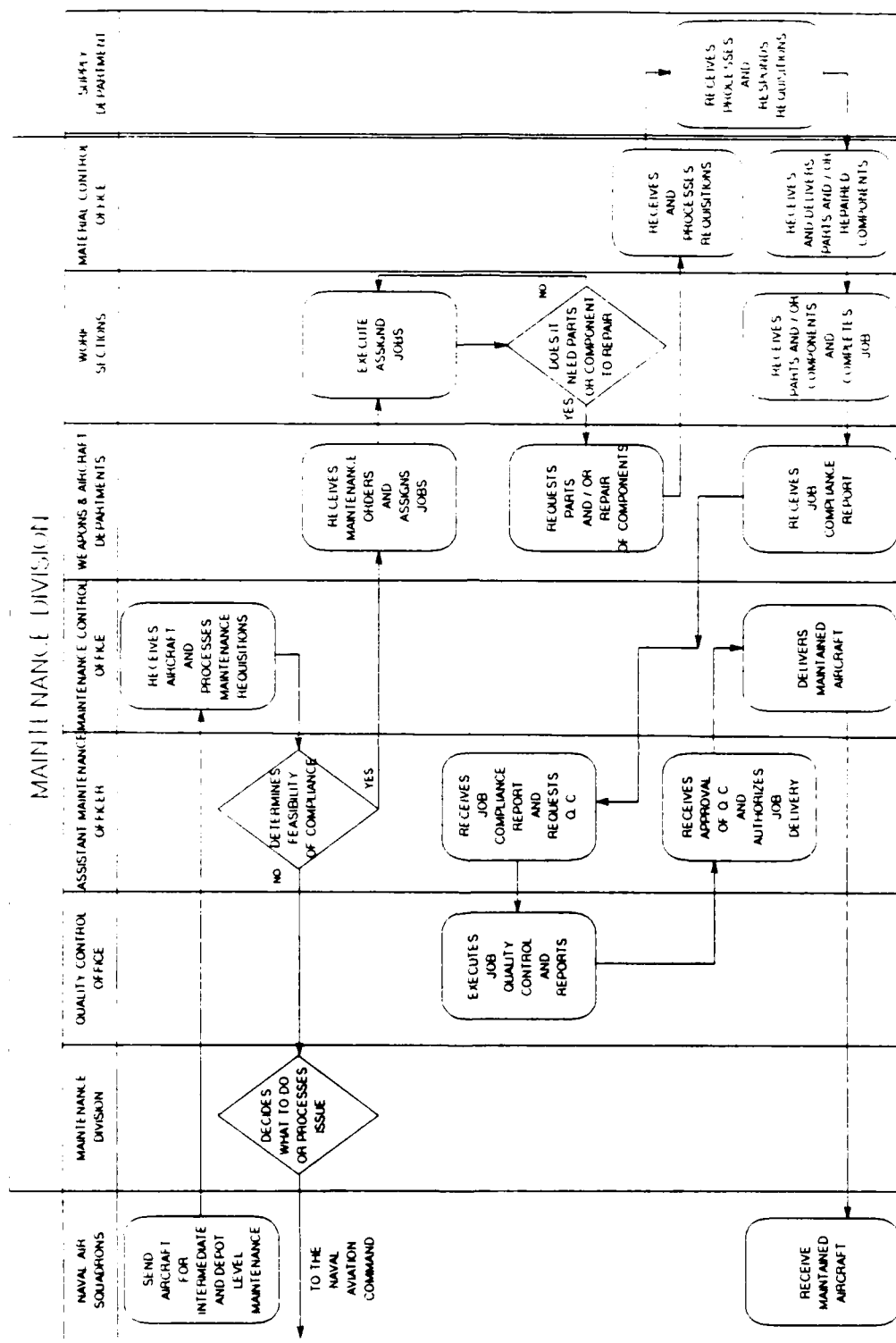
- Navigation and Communication Equipment Section. Former Avionics Shop.
- Radar and Sonar Section. Derived from the split of the former Weapons and Sensors Shop.
- Instruments Section. Former Electronics Shop.
- Weapons Section. Derived from the split of the former Weapons and Sensor Shop.

. Aircraft Department. The former Production Section, is composed of the same shops, but



Structure No 2 Maintenance Division Organizational Chart

Figure 30



Structure No 2 Maintenance Division Work Flow

Flowchart No 3

reclassified as Sections and the removal of the flight line shop.

The changes proposed in the Logistics area solves the problems categorized in Chapter VI as: Inefficient Chain of Command, by removing a bureaucratic step for the Maintenance Department. Lack of control and Coordination, by establishing a Material Control Office to act as liaison between Maintenance and Supply Department, and creating formal authority of the maintenance control function over the departments executing the maintenance. The internal control problem of the Supply Department in handling the flow of spare parts is thought to be solved by automating the information process. Job design problem, by permitting some expansion of the electronics maintenance function through its new classification.

3. Pros and Cons

The structure proposed as alternative # 2 has the following pros and cons:

a. Pros

- . Solves the duplication of effort problem.
- . Removes the bureaucratic extra steps in the chain of command.
- . Allows more discretion of the Squadron Commanding Officers, removing this functional problem.
- . Removes the lack of control and coordination problem of the Transport Squadron, by reorganizing and the reducing the amount of personnel required to comply with its mission.
- . Through its formal authority facilitates the maintenance control function.
- . Proposes a solution to the internal control problem of the Supply Department by information processing automation.
- . Solves the coordination problem between the Supply Department and the Maintenance Division.
- . Allows some expansion of the electronics maintenance function.

- . Reduces the amount of personnel required for operational staff through the use of a Staff Task Force.
- . Eases the functional relationship of the Base Defense Department.
- . Maintains an adequate span of control.

b. Cons

- . Creates a more bureaucratic staff within the Maintenance Division.
- . Implies extra costs in automation of information system within Supply Department.
- . Creates more administrative overhead costs for the Squadrons by including an administrative office.

C. ORGANIZATION STRUCTURE # 3

1. Organizational Overview

The third organization to be proposed has the following Macro-structure:

- . Command
 - Deputy Commander
 - Aide and Secretariat
 - Finance Office
 - Naval Safety Office
 - Information System Office
 - Staff Task Force
- . Staff Units
 - Operations Division
 - Personnel Division
 - Aircraft Maintenance Division
 - Weapons and Electronics Maintenance Division
 - Logistics Division
 - Logistics Committee
- . Line Units
 - ASW and Maritime Patrol Squadron
 - Helicopter Squadron
 - Transport Squadron
 - Air Training Squadron

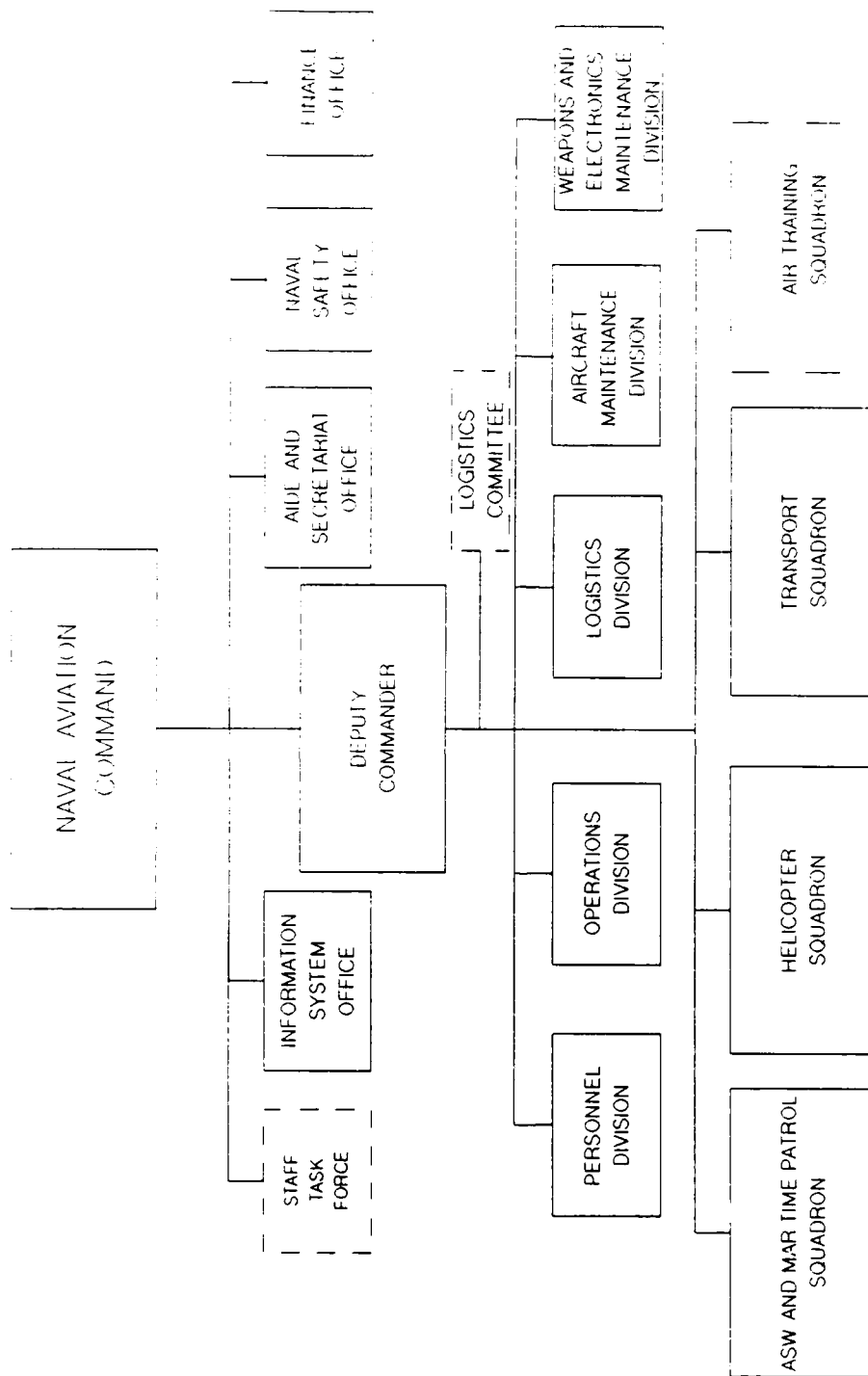
Figure 31 illustrates the Macro-structure of this organization.

2. Changes Proposed

The changes proposed by this organization with respect to the current Naval Aviation organization are the following:

a. Command and Staff Area

(1) Reclassification of the Chief of Staff. This proposal reclassifies the Chief of Staff



Structure No 3 Macro-Organizational Chart
Figure 31

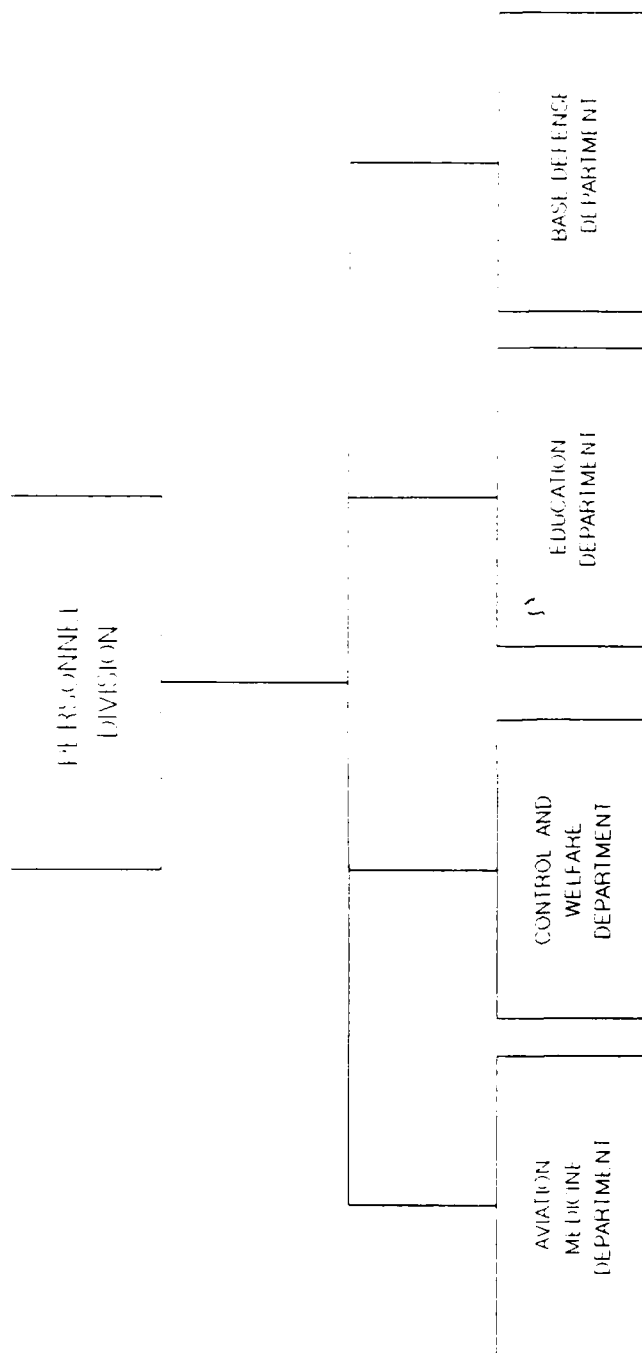
as Deputy Commander, based on the same reasons explained in Structure # 2 (See Chapter VII p. 79).

(2) Reclassification of the Personnel Section. This proposal restructure this Section as a Personnel Division in the same manner proposed in Structure # 2 (See Chapter VII p. 79). This new arrangement allows better compliance with important personnel specific functions such as health care, and education. Also, smooths the relationship between the Base Defense Department and the Personnel Officer.

Figure 32 depicts the Organizational Chart of the Personnel Division.

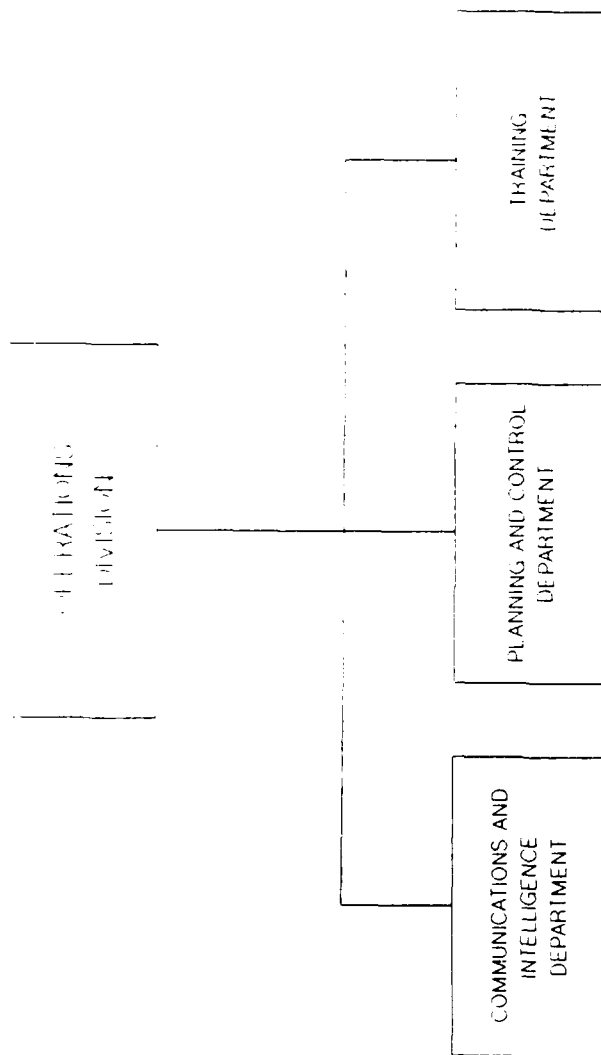
(3) Integration of the Planning and Control, and Communication and Intelligence Sections. The same reasons stated for Structure # 2 are applicable to this proposal (See Chapter VII p. 81). The integration under the Operations Division of these Sections and defining the Flight Control and Planning and Control as one Department solves the duplication of efforts problem stated in Chapter VI. Figure 33 illustrates the Operations Division and its different departments.

(4) Addition of an Information System Office. In order to increase the capacity to process information, an automation of the processing of information on a global range is proposed. The high interdependence among the maintenance, supply, and operational units, suggests the need for a global data base. It is thought that the creation of an office to supervise the collection, conversion, transmission, representation, organization, storage, calculation, and retrieval of data and/or information is important to ensure accuracy, speed, and security of the information process. Due to the relevance of this



Structure No 3 Personnel Division Organizational Chart

Figure 32



Structure No. 3 Operations Division Organizational Chart

Figure 3-3

function, this office should be under direct command of the Commander of Naval Aviation.

b. Operational Area

(1) Reorganization of the Operations Division. This structure proposes the same changes as Structure # 2 does (See Chapter VII p. 81). Figure 33 shows the Organizational Chart of this Division, where the Squadrons don't appear. This avoids the extra bureaucratic step in the chain of command of the operational units.

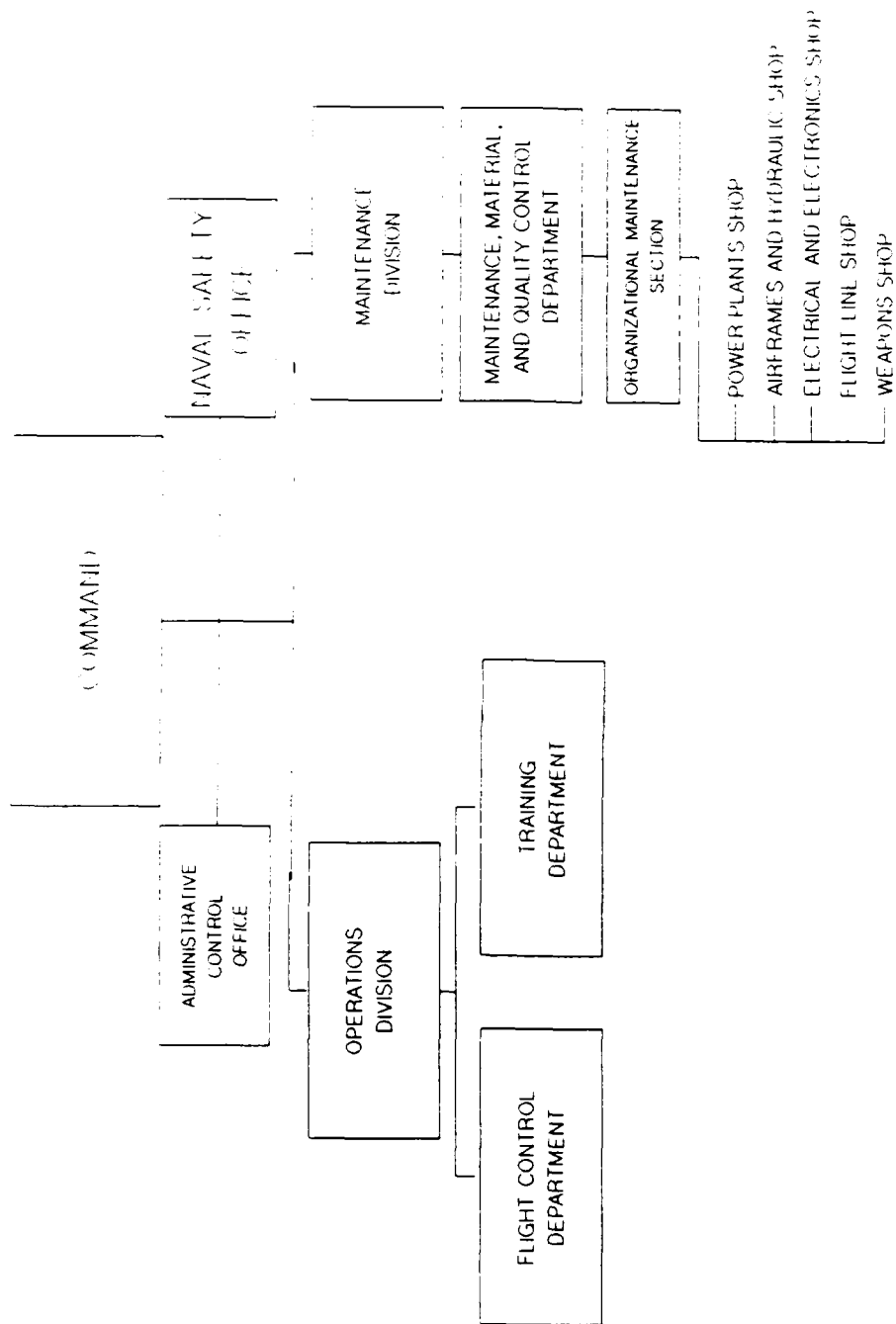
(2) Reorganization of the Squadron Units. The changes proposed by this structure are the same as Structure # 2 (See Chapter VII p. 84). Figure 34 depicts the Squadrons' Organizational Chart that, as explained in Structure # 2 proposal, solves the Squadrons' maintenance problem and the Transport Squadron's lack of adequate control and coordination problem.

c. Logistics Area

The changes proposed in this area are the following.

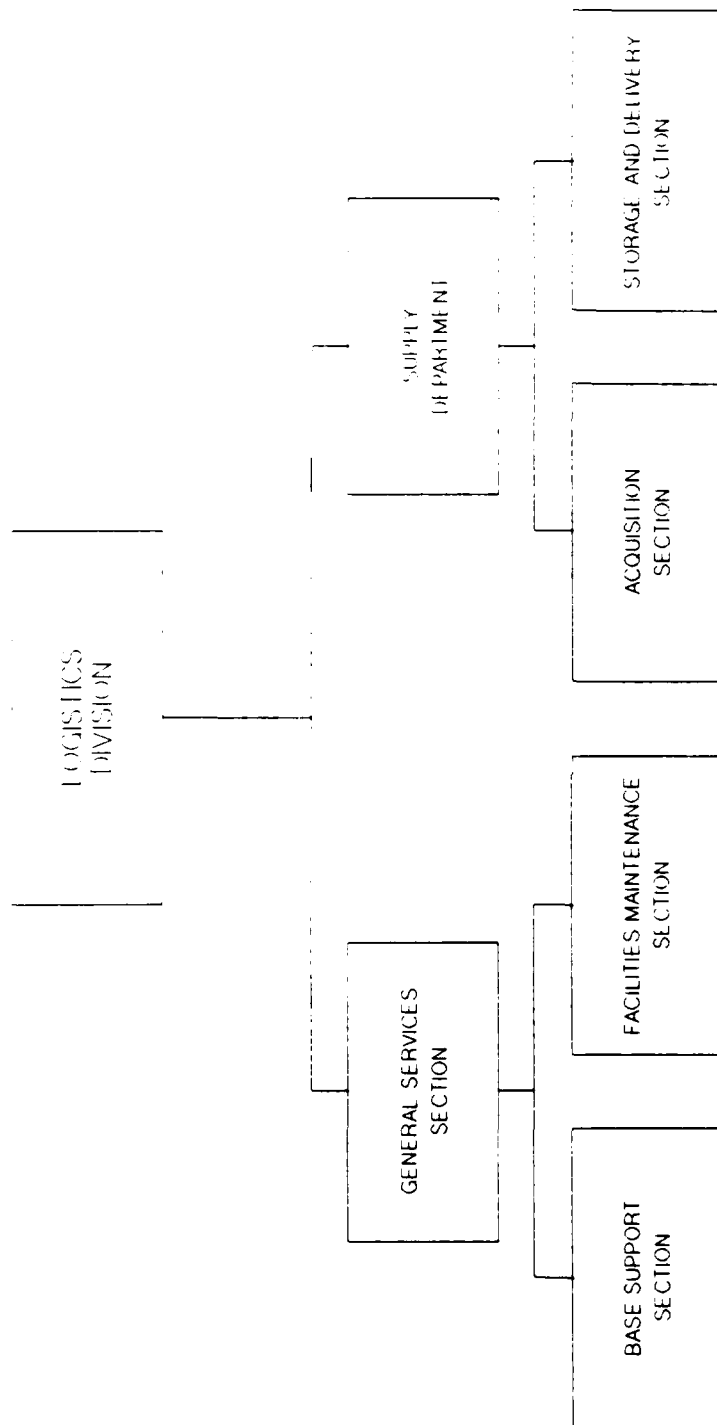
(1) Reclassification of the General Services Division. Same as explained for Structure # 2 (See Chapter VII p. 86), this sub-unit is reclassified as department and rearranged as shown in Figure 35.

(2) Reclassification of the Maintenance Department. Structure # 3 proposes to elevate this function to a division category. Also, to split it into its two major components, Aircraft Maintenance and Weapons and Electronics Maintenance, as two new divisions. These two divisions are tasked with supporting naval aircraft at the intermediate and depot level maintenance.



Structure No 3 Squadrons' Organizational Chart

Figure 34



Structure No. 3 Logistics Division Organizational Chart
Figure 35

The Aircraft Maintenance Division is configured as shown in Figure 36 with the following sub-units:

- . Quality Control and Analysis Office. For the same reason as explained in Structure # 2 (See Chapter VII p. 88), this sub-unit is placed under direct command of the Aircraft Maintenance Division Officer. It assures that quality maintenance is done by this Division.

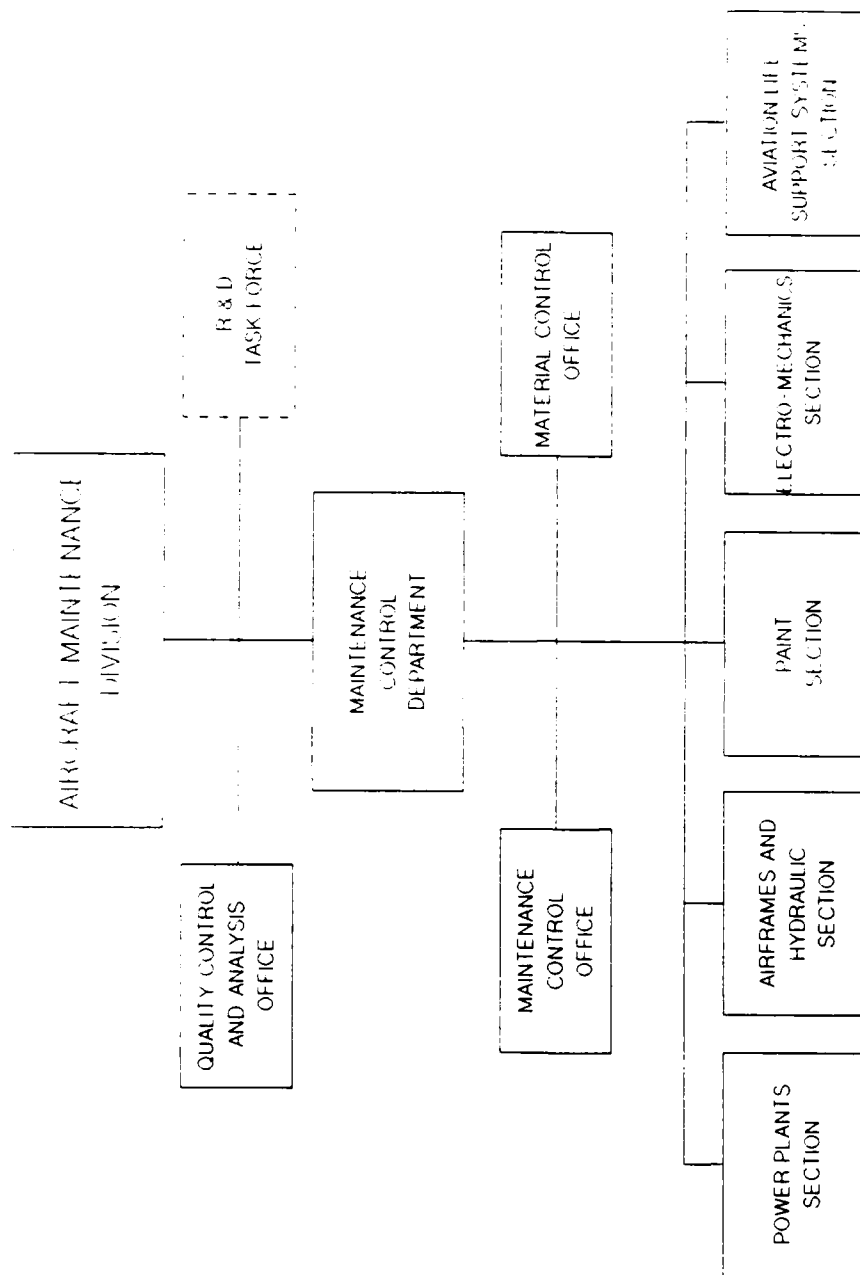
- . Research and Development Task Force. Designated by the Aircraft Maintenance Division Officer, as required, to solve specific technical problems.

- . Maintenance Control Department. In charge of the scheduling and control of the aircraft maintenance other than weapons and electronics. To accomplish this function, it has a staff sub-unit called the Maintenance Control Office. Also, this department is responsible to provide the required spare parts and to handle the components to be repaired by the Weapons and Electronics Division or outside the Naval Aviation Organization. This support function is accomplished through the Material Control Office (See Figure 36).

Under direct control of this department there are five sections. These sections provide the specialized maintenance for the following areas: Power Plants, Airframes and Hydraulic, Paint, Electro-mechanics, and Aviation Life Support Systems, and correspond to the current shops in those areas.

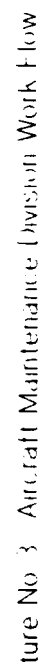
Flowchart No 4 shows the Work Flow of the Aircraft Maintenance Division in more details.

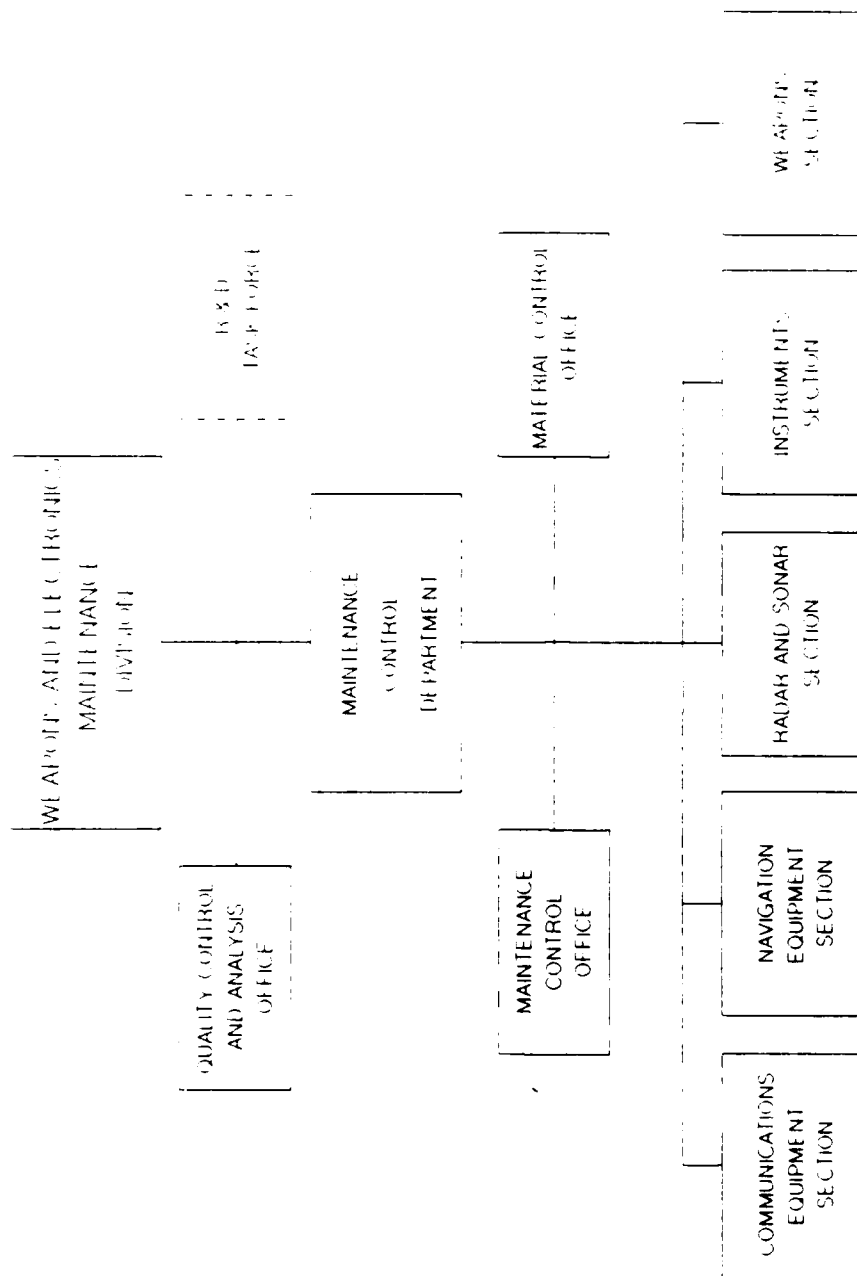
The Weapons and Electronics Maintenance Division is configured as illustrated in Figure 37 with the following sub-units:



Structure No. 3 Aircraft Maintenance Division Organizational Chart

Figure 36


$$f_{(t)} w(t) \uparrow_{t, t+1} N_{(t)} 4$$



Structure No. 3 Weapons and Electronics Maintenance Division Organizational Chart

Figure 37

. Quality Control and Analysis Office. The same reason given in Structure # 2 is applied here (See Chapter VII p. 88). It assures the quality of the weapons and electronics maintenance of the Avionics and aircraft armament systems.

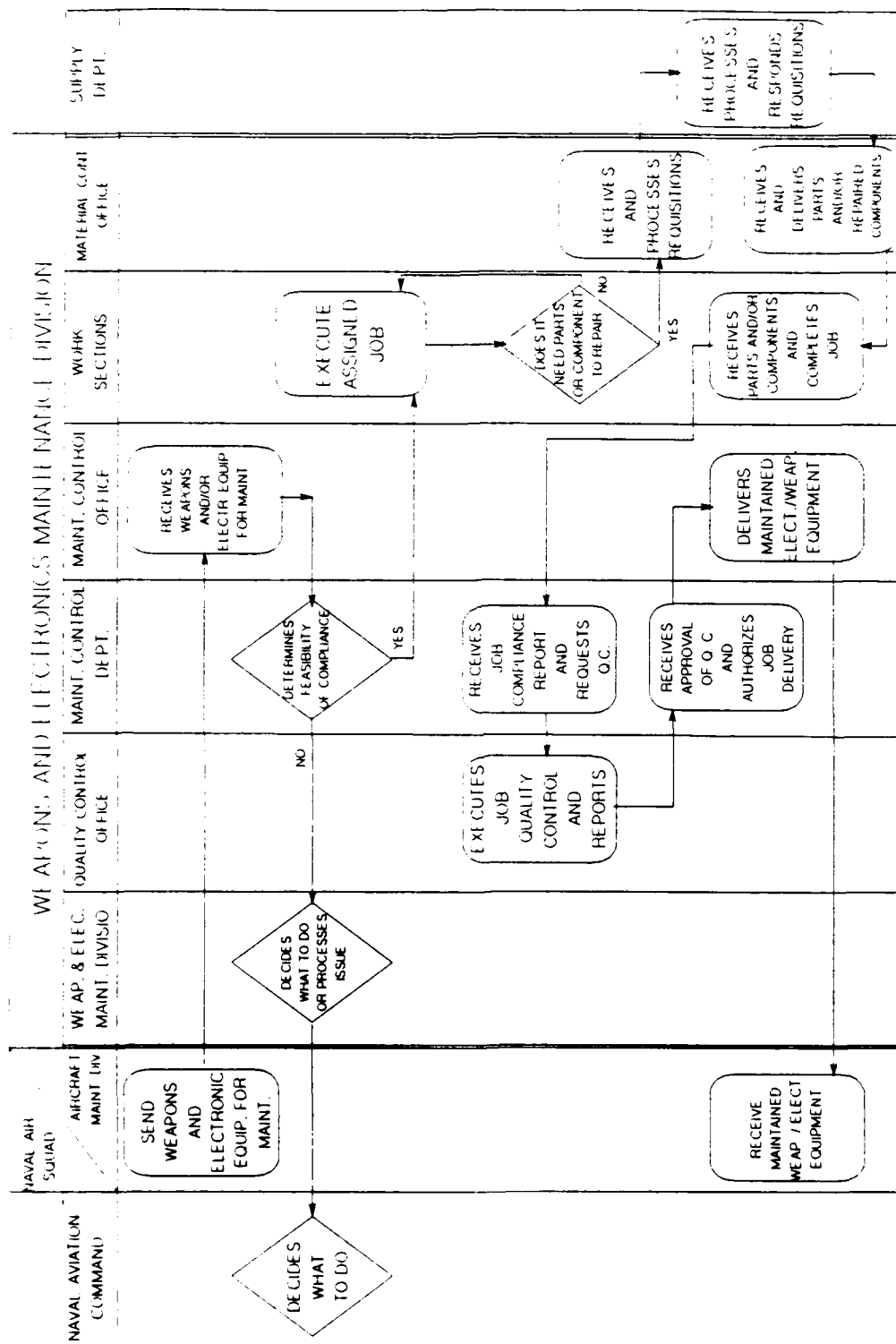
. Research and Development Task Force. Designated by the Weapons and Electronics Maintenance Division Officer, as required, to solve specific technical problems.

. Maintenance Control Department. It manages the scheduling and control of the weapons and electronics systems maintenance for the naval aircraft. Also, it is responsible for the control of a supply of spare parts and component repairs outside the organization. To execute its function, the Maintenance Control Department has two staff offices: The Maintenance Control Office, and the Material Control Office.

Five sections, under direct control of this Department, accomplish the maintenance of the different weapons systems and avionics equipment. They are: Communication Equipment Section, Navigation Equipment Section, Radar and Sonar Section, Instruments Section, and Weapons Section.

Flowchart No 5 illustrates the Work Flow proposed to be accomplished by the Weapons and Electronics Division.

The changes proposed in this area solve the problems cited in Chapter VI of: inefficient chain of command, by removing the Maintenance Department from the Logistics Division, making it a Division with direct access to the Naval Aviation Command. Lack of adequate control and coordination, by creating a formal authority of the maintenance control function over the sub-units executing the maintenance work, and establishing the Material Control Offices as liaison



Structure No 3 Weapons and Electronics Maintenance Division Work Flow

Flowchart No 5

among the Aircraft Maintenance Division, The Weapons and Electronics Division, the Supply Department, and the Squadrons. To help in the coordination and control of the information flow, it seems necessary to create an automated Information System of global range. This would enable the organization to handle more efficiently the great amount of data that already exists. Job design problem is solved by expanding this function to a Division category, which allows the acquisition of more human and material resources.

(3) Provisions for a Logistics Committee.

This structure contemplates the existence of a Committee to coordinate the effort of the Aircraft Maintenance Division, the Supply Department, and the different Squadrons' Maintenance Divisions. It would be chaired by the Deputy Commander, having as members the Heads of the Sub-units involved. This committee is considered important to avoid coordination conflicts in the interdependent work, assuring smoothness in the accomplishment of the maintenance function, which was the most problematic area encountered in the organization. The schedule of meetings will be considered after an on site analysis.

3. Pros and Cons

This third structure has the following pros and cons:

a. Pros

- . Solves the duplication of effort problem.
- . Removes the extra steps encountered in the current chain of command.
- . Allows an increase in the effectiveness and efficiency handling the information within the organization.
- . Allows more discretion of the Squadron Commanding Officers, removing this functional problem.
- . Removes the lack of adequate control and coordination problem of the Transport Squadron, by integrating its sub-units

reducing the need of personnel, especially in maintenance.

- . The maintenance control function is facilitated through formal authority.
- . Provides a solution for coordination among the Maintenance Divisions and the Supply Department.
- . Provides expansion of the electronics maintenance function to accommodate enough room for high level technicians.
- . Eases the functional relationship of the Base Defense Department with the Personnel Division.

b. Cons

- . Increases the span of control by creating new units.
- . Requires a larger amount of personnel.
- . Implies extra costs in Information System investment.
- . Creates more administrative overhead costs for the Squadrons.

VIII. CONCLUSIONS AND RECOMMENDATIONS

A. CONCLUSIONS

Based on the analysis of this study of the Venezuelan Naval Aviation organization, the following may be concluded.

The Venezuelan Naval Aviation is an operational branch within the Venezuelan Navy that has been experimenting with an increasing demand on its tactical and administrative support. This is especially notable during the last seven years.

The variety and unstable environmental factors define a quite complex and dynamic environment.

The current formal organization which was set to achieve the purpose of the Venezuelan Naval Aviation, as in any other organization, has many elements that should be analyzed to look for improving of its performance. However, this study was limited to a focus on the structure of the organization only, where deficiencies related to coordination and control, functional relationship, job design, task conflicts, and chain of command were encountered.

The most relevant problem encountered was one related to the work flow within the Maintenance Department, and between this Department and the Supply Department.

Three organizational structures were proposed to solve the structural deficiencies encountered during the research; but the use of any one implies that some trade offs have to be carried out.

- Structure No 1 proposes, perhaps, the easiest transition to a new structure; however, it leaves possibilities of ineffectiveness within the Maintenance Division due to the internal arrangement.

- Structure No 2 provides a solution for all the problems cited, but requires the relocation of a Squadron and higher implementation costs than Structure No 1.
- Structure No 3 provides a greater capacity for future expansion of the organization, but incurs the highest administrative overhead costs.

B. RECOMMENDATIONS

Although Structure No 3 is perceived to allow a greater development of the Naval Aviation, it is recommended that Structure No 2 be considered as the first possible solution for the current organizational problems. This permits a gradual transition to a more complex and highly developed organizational structure.

An analysis of the other organizational factors, such as people, technology, tasks, rewards, and processes, should be carried out in order to complete a comprehensive diagnosis of the organizational problems affecting the Venezuelan Naval Aviation.

APPENDIX A
INTERVIEW QUESTIONNAIRES

A. ON SITE INTERVIEWS

1. To the best of your knowledge, what is the mission that you have to accomplish?
2. What are the objectives that your sub-unit is pursuing?
3. What are the main activities that your sub-unit accomplishes?
4. Do you have a written procedures manual?
5. How does work flow within your sub-unit?
6. What is the relationship with other sub-units?
7. What are the roles of the personnel of your sub-unit? How many are on your rosters?
8. What is the communications flow pattern? Can you manage it?
9. Do you think that your current assigned human, material, and financial resources are enough?
10. What main problems do you have in your organization? How do you think they might be solved?
11. In your opinion, what are the main problems affecting the performance of the whole organization? Which one is the most problematic sub-unit?

B. TELEPHONE INTERVIEWS

1. What is the difference between the tasks of the Avionics and the Electronics shops under the Weapons and Electronics Section, which is not clarified by the organizational manual?
2. What exactly was the problem that you saw with the capabilities of electronics maintenance?
3. Do you know what the reasons why the Transport Squadron split? Do you know any specific problem that

could impede the reunification of the Transport Squadron?

4. Do you know what the Industrial Relations Section under the Scheduling and Control Department is supposed to do?

5. How many are the spare parts requisitions handled daily?

APPENDIX B

ORGANIZATIONAL COORDINATING MECHANISMS

As you read in Chapter II, organizations involve people working in different jobs to achieve a common goal. In order to achieve a high level of performance, the activities in the organization must be coordinated. As the organizations grow in complexity, different types of coordinating mechanisms must be implemented to achieve the desired goals. Galbraith in his book listed as reference 17 states on page 9: "The organization design problem is to create mechanisms by which an integrated pattern of behavior can be obtained across all the interdependent groups."

Following Galbraith's information processing model, different types of coordinating mechanisms are implemented in accordance with the complexity and uncertainty of the interdependent processes. The more complex and uncertain the processes are the more flow of information is required [Ref. 17:pp. 8-9]. This model establishes the following coordinating mechanisms going from low to high uncertainty.¹⁴

A. RULES, PROGRAMS, PROCEDURES

When the tasks are highly structured and one can anticipate the job-related situation; rules, programs, and procedures are the best mechanisms that allow us to reduce the amount of communication needed among the subunits, giving also a stability to the organization's operations by providing a memory to handle routine situations.[Ref. 17:p. 10]

¹⁴ Uncertainty: The difference between the amount of information required to perform the task and the amount of information already possessed by the organization.[Ref. 18:p. 5].

B. HIERARCHY

As new situations arise, where the rules of the organization do not contemplate the appropriate behavior, and because of interdependence of all sub-tasks, a mechanism that collects information and makes decisions accordingly is needed. Managerial roles arranged hierarchically are the mechanisms to solve uncertainties that cannot be solved at lower levels by applying rules, programs, and procedures.

One important thing to point out is that this mechanism is employed in addition to, not instead of, the use of rules. This mechanism is limited by the amount of information that the person in the managerial roll can handle.[Ref. 17:pp. 11-12]

C. GOAL SETTING

When the requirements of decision making overload the hierarchies, the need to lower the decision making discretion is evident. However, due to the task interdependency the goal setting mechanism is required to avoid sub-optimization. This mechanism by providing specific targets for each subunit helps to coordinate interdependent sub-tasks and at the same time allows discretion at the local sub-task level. Employees choose the appropriate behavior to achieve the target.[Ref. 17:pp. 13-14]

D. CREATION OF SLACK RESOURCES

This mechanism through the creation of slack resources (e.g. allowing more time) reduces the amount of information that must be processed and prevents the overloading of the hierarchical channels. This, of course, diminishes the efficiency by lowering the performance levels.[Ref. 17:pp. 15-16]

E. CREATION OF SELF-CONTAINED TASKS

Another way to reduce the amount of information needed in the decision making process, besides the creation of slack resources, is by changing from the functional task design to the self-contained design, where each subunit has all the resources it needs to perform its task. Thus, this mechanism avoids conflict by reducing interdependence and resource sharing.[Ref. 17:p. 16]

F. INVESTMENT IN VERTICAL INFORMATION SYSTEMS

This mechanism is set to increase the capability to handle more information by employing computers, various man-machine combinations, assistants-to, etc. As Galbraith says:

The investment strategy is to collect information at the points of origin and direct it, at appropriate times, to the appropriate places in the hierarchy. The strategy increases the information processing at planning time while reducing the number of exceptions which have overloaded the hierarchy. [Ref. 17:pp. 17-18].

G. CREATION OF LATERAL RELATIONS

As a mechanism developed to increase the amount of information available for decision making, lateral relation is a process that cuts across the chain of command and allows to move the decision making process down to where the problem is in the organization. This mechanism avoids the creation of self-contained tasks.[Ref. 2:p. 68].

There are several types of lateral relations. The following paragraphs discuss some of them from simple relations to complex ones that require a greater investment of time and effort.

1. Direct Contact

It is the simplest and least costly of the lateral relations. It allows sharing information between managers jointly affected by a problem,

avoiding the necessity for referring problems to upper levels in the hierarchy.[Ref. 17:p. 49]

2. Liaison Role

This is a specialized role set to handle communication between departments. This mechanism facilitates the communication between two interrelated departments, bypassing the long lines of communication involved in upward referral.[Ref. 17:p. 50]

3. Committees and Task Forces

This mechanism pools the expertise of different members of the organization and channels their efforts toward a common goal. Committees are generally a formal part of the organization's structure to deal with recurring problems. They are usually comprised of a chairperson and members and have regularly scheduled meetings. On the other hand, Task Forces are set to deal with a particular problem. The units concerned with the problem supply one or more members. Once the solution is attained, the Task Force is dissolved.[Ref. 8:p. 268]

4. Integrating Role

When coordination between units becomes more and more complex, an integrator role may be helpful. The integrator, by not being dominated by the perspective of any group, coordinate and moderate the diverse group's orientations, permitting the achievement of the organization's goal.[Ref. 2:p. 68]

5. Matrix Design

This mechanism place formal authority in the integrator's role, creating lines of authority that cut across the existing vertical ones. In this design the managers of two areas supervise the same group of employees. The requirements of both areas are routinely taken into account. Just the same as a task

force, a matrix structure may be dissolved when a project is over.[Ref. 8:p. 268]

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